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SOME RESULTS IN THE TREATMENT OF EPILEPSY.

READ BEFORE THE MICHIGAN STATE MEDICAL SOCIETY, MAY, 1893.

BY DAVID INGLIS, M.D.,

Professor of Nervous and Mental Diseases, Detroit College of Medicine.

A FEW days ago a medical friend jokingly said, "You neurologists see a lot of very interesting cases, but you can't do anything for them." My friend was a surgeon and has a surgeon's materialistic turn of mind. The immediate results of a surgical operation appeal very strongly to many minds, and with the phenomenal advance which surgery has made in the past twenty years there has spread through the profession a distrust of medicine and a scepticism in regard to any but surgical or mechanical methods. Nevertheless, it remains true that all the physiological processes of the body, every function whose wrong action makes the physician necessary at all,—every one of these consists in dynamic activities which are not mechanical, which elude all surgical procedures, which even the microscope cannot make visible. When surgery shall have won its final victories, there will remain still the whole field of deranged physiological activity for the study of the therapeutist.

If we plain physicians cannot bring about results fully as successful and as permanent as those accomplished by the surgeon, we ought to take in our shingles and take up with more productive labor.

The present tendency to surgical or mechanical methods of treatment is simply the swing of the pendulum of professional opinion to its extreme divergence. Hence result many useless operations both in brain and abdominal surgery,—operations neither justified by the symptoms previous to operation or the results after it. There is abundant evidence that the more careful and judicious surgeons as well as physicians recognize this, and we may believe that professional opinion is beginning to return to the line of true therapeutics.

On the other extreme we find the physicians who fall into routine ways of drugging their patients. Here again just as disastrous results follow as from unwarranted operations.

The following cases illustrate both the disastrous effects of unwise routine treatment and the positive results which careful medicinal and hygienic treatment can effect.

I have chosen epilepsy because it is of frequent occurrence, and in no form of nervous disease do routine methods of treatment more uniformly prevail.

The particular routine treatment is that by bromides. That it should be so is not to be wondered at, for the text-books, with great uniformity, give the bromide treatment, and allude to any other treatment as purely secondary. The impression which the reader gets is that the other matters of treatment are of little value, hardly worth mentioning.

For example, Starr, in his "Familiar Forms of Nervous Disease," says, "The chief reliance in the treatment of epilepsy must be in the use of the bromides." He then mentions tincture of simulo with scant approbation. States that "antifebrin has been tried in a number of cases without any favorable result."

He advises inhalations of nitrite of amyl and nitro-glycerin, or codeine given *with* the bromides and chloral. This completes the therapeutic resources in a work published in 1891!

Hare, in his hand-book on epilepsy, is more generous. He notices digitalis and belladonna, but practically considers them simply as adjuvants to the bromide treatment. Cannabis indica meets with his endorsement. Opium he condemns, and justly. Zinc he has no confidence in, nor has he in nitrate of silver. He speaks in more positive terms of the value of antifebrin or antipyrin than of any other drug, except the bromides, but his main reliance is the bromides. I think any reader of Hare would naturally put his whole faith in bromides. He puts it this way, "There is no other drug known which can be relied on so absolutely or which is so powerful in its action and devoid of *marked toxic effect*, unless given in enormous doses," as the bromides.

The general practitioner, then, is well justified in going straight on with the bromides; and yet I venture the assertion that the routine use of the bromides has been as disastrous to many patients as the unchecked progress of their epilepsy could have been. I believe, further, that the bromides, as commonly used, are even worse than the disease. No one has died suddenly of bromide-poisoning, but that the bromides have toxic effects is, unfortunately, too evident.

To illustrate: On December 30, 1891, I was consulted by J. K., aged thirty years; married five years previously; a well-to-do merchant; of excellent physical development and undoubted good habits of life.

In February, 1887, the first convulsion occurred, followed at long intervals by three others. Three years ago, however, he began to have what his family knew as "dazed spells,"—periods of transient unconsciousness,—during which his conduct was irrational, and he certainly had delusions, evidently attacks of petit mal. These occurred with varying frequency for three years, but steadily increased in number until, when he came under my care, he was having them every day, and often several times a day. When he came to me he had almost complete loss of sexual power, and his mental state was that which made the most serious feature in his condition. His memory was utterly unreliable and his mental processes sluggish. He had been obliged to wholly abandon any attempt to conduct his business affairs. He had been steadily under treatment, first under physicians in the vicinity of his home and later under specialists in Chicago, and, so far as I could learn, the treatment was that of the bromides first, last, and all the time. When the loss of memory had become so profound he went to Chicago, and was told by his physician to continue the same bromide mixture. I should have mentioned that the patient was tormented by profuse or, as he termed them, "drowning" night-sweats and nocturnal tremor.

The case seemed to me one of "marked toxic effect" of bromides. The patient was ordered to stop bromides absolutely, put upon atropine, $\frac{1}{120}$ grain t. i. d., and given 3 grains of chloral hydrate at bedtime. Ten days later I

noted "no spell in last eight days;" "no night-sweats." This plan was continued until the end of March, when quinine in tonic doses was added. The friends of the patient were well pleased with the general progress of the case, although attacks of petit mal recurred at intervals of from six to ten days. The treatment, varied to suit the exigencies, consisted essentially in atropine and tonics, but no bromides, except on one occasion, when potassium bromide, 15 grains, and chloral, 5 grains, were given for a few doses to control headache. Fluid extract of cimicifuga had no effect on the attacks of petit mal, but caused severe headaches.

In July, 1891, seven months after he began treatment, I first put him upon antifebrin. Up to this time the petit mal kept along with a frequency much less, to be sure, than while he was saturated with bromides, but still discouraging in their persistence, about once a week.

The subsequent course of the affair was much more gratifying. The intervals began to grow longer, the memory to return decidedly, and I can report to-day that the patient has had no spell since November 21, 1891. He has resumed full control and responsibility in his business; his memory is perfect, except that there is a period in his life (that of bromide intoxication) of which he has no recollection. The treatment has been that started nearly two years ago,—that is to say, he has kept up steadily either antifebrin alone or with phenacetin. He now takes a small dose of antifebrin and phenacetin twice a day.

Such a case demonstrates two things: first, that bromides have "marked toxic effects," and, second, that medical therapeutics are as efficient as surgical.

Here is another, kindly sent to me by Dr. McKenzie, of Essex, Ontario: Young married man, aged thirty; foreman in a mill; of good habits and good heredity; began by having an epileptic convulsion in bed, October 21, 1888. He had been felled by the blow of an axe upon his forehead twelve years before the first fit. He had also "lived with a headache in both temples" for some three years before the first fit. The convulsions recurred at intervals varying from ten to four months. Here, again, as in the last case, attacks of petit mal came on, during which the patient wandered off to considerable distances, the unconsciousness evidently lasting half an hour or more. The mental failure, although not so profound as in the first case described, was cause of concern. An abundant bromide acne corroborated the patient's account of steady use of bromides, and the progressive frequency of the spells showed the inefficiency of the routine treatment.

The bromides were at once discontinued and patient put upon arsenic and fluid extract of cimicifuga with considerable benefit, due, as I now believe, chiefly to cessation of bromides.

In August, 1891, he was put upon phenacetin and salol, after which the improvement became well marked. I lost track of him until March 6, 1893, when he turned up again with this history. He had kept himself supplied with his capsules, and had gone some eighteen months without a severe convulsion and with only a rare and very transient spell of petit mal, so that he became confident, stopped medication, and a day or two before he came to see me had a fit. He is now ready to go on with his phenacetin.

The case, while not as marked an illustration of the ill effect of bromides as No. 1, shows this: That fully as good results were obtained by antifebrin and phenacetin as the most ardent supporter of the bromide plan would claim.

In August, 1892, a young business-man was referred to me by my friend Dr. Burr, of the Eastern District Asylum. He gave a history of having been obliged to abandon business, of having spent two thousand four hundred dollars in a long visit to California in search of health, and returned to Detroit, both himself and friends utterly discouraged.

He had frequent epileptic attacks, as many as three a day, during which he became wholly unconscious. In falling he fell forward, and the right side stiffened more than the left.

The most serious phase of his trouble, however, was his mental state. He had become forgetful and mentally inert to a degree which quite precluded him from attending to his business. Besides this, he was becoming ugly, so that his wife needed to avoid crossing him in any way. Corresponding with this mental state, his facial expression was almost *nil;* ptosis well marked; face suffused. The man's whole appearance and demeanor, his mode of speech and gait, as well as the history given, joined to make a complete picture of a nervous system rapidly degenerating. The prognosis was given as very doubtful.

A feature in the case, of which the patient himself made more complaint than of anything else, was a troublesome dyspepsia.

He brought a history as usual of bromides and also iodides.

What is the result to-day? I received a check from him on May 5, 1893, and on the back of the bill this pleasant endorsement: "I'm too busy to come and see you, but am

able to sign checks." In brief, the young man is hard at work in his old business; has set up housekeeping; his facial expression is that of an active, interested man; he has had no convulsion since September, 1892.

Guided by previous experience, he was ordered at my first visit to discontinue his bromides, and was put upon salol and phenacetin, which he has continued in lessened doses up to the present time, although now he takes a capsule only at irregular times. He judges by his own sensations: a headache, a fulness over the eyes, or a little increase of nervous irritability, he takes a few capsules.

I have given these cases because in each one a long enough trial has been made to demonstrate that the action of these drugs is permanently beneficial, and also to demonstrate that the steady continuance of the drug is not harmful. There is no such wretched effect upon the mental state as is produced by the bromides.

I could add to the list many cases in which I have given these drugs for shorter periods. These cases might not satisfy my hearers, on account of the comparatively brief duration of the term of freedom from convulsion. At the same time this experience has satisfied me thoroughly of the practical efficiency of antifebrin and its analogues. One case will illustrate the grounds of my belief.

Mrs. K. T. was referred to me by Dr. J. H. Carstens. She had been sent to him in the hope that her epilepsy could be cured by removal of her ovaries. Dr. Carstens refused to operate because he could not satisfy himself that there was a connection between the state of the ovaries and the nervous disorder clear enough to warrant the operation. The fits had been going on for fourteen years. When she came to me she had attacks of petit mal from one to three times a day. This case was at once put upon antifebrin and phenacetin. Improvement was prompt. She remained in the city some six weeks, and then felt so much better and more confident that she returned home and resumed her domestic activities. The last report I had from her was that she was well, except that about once a month she still has an instantaneous "flash of unconsciousness."

Surgery could hardly have done better, yet such cases as this have been the warrant for many an ovariotomy.

To sum up: I believe that the routine use of bromides does serious harm. That it is a serious mistake to go doggedly on with bromides in any case in which the attacks of grand mal, but more especially of petit mal, persist or increase in frequency while the patient is taking bromides.

I believe that bromides should be given in full doses to begin with, so that if they are to prove of benefit in a given case the good effect will be promptly shown. The dose should then be diminished, and always carefully watched. Failure of memory, mental torpor, change of character, are worse things than an occasional nervous explosion, and when the toxic effects of the bromides first appear, the use of the drug ought to be stopped at once.

I believe that we have in antifebrin and its analogues a group of remedies which form efficient substitutes for the bromides. They can be given for long periods with marked benefit, and their use is without any deleterious effect upon the mental state. This alone gives them an immense advantage over the bromides. One precaution, however, must be observed. The drugs need not be given in large doses, but there are persons on whose circulatory apparatus even moderate doses exercise a depressing effect. Such cases are not fit for the antifebrin treatment.

That the antifebrin group has a profound power over the cerebro-spinal axis is demonstrated by the effect which we so well know upon reducing temperature. My experience with this class of remedies in diabetes has corroborated my reliance upon them, and certainly the experience upon which this paper is based goes far to prove that prompt and thoroughly satisfactory effects in controlling the epileptic explosion can be expected.

LACHRYMAL OBSTRUCTION AND ITS TREATMENT.

READ BEFORE THE PHILADELPHIA COUNTY MEDICAL SOCIETY, JUNE 14, 1893.

BY CHARLES HERMON THOMAS, M.D.

THE proper performance of the function of drainage is indispensable to the health of the eye. Interruption in the exercise of this function becomes a source of discomfort or danger, with results varying from simple lachrymation to abscess, fistula, or at times destructive disease of the eye itself. Such interruption, when it occurs, therefore, demands careful consideration and efficient treatment.

Beginning at the puncta lachrymalia, the starting-point of the lachrymal drainage system, there are certain points at which, chiefly for anatomical reasons, obstruction is most apt to occur. These points are: 1, the puncta and

canaliculi; 2, the point of junction of the lachrymal sac and nasal duct,—by far the most common of all; and, 3, rarely, the termination of the nasal duct in the nose.

Disease or displacement of the puncta may give rise to an overflow of the tears, the result of a faulty mechanical relation of the channel entrance with the front of the eye. In this respect the lower punctum is of greater importance than its fellow, owing to the gravitation of the tears.

Two abnormalities of the puncta are met with,—displacement and, much more rarely, obliteration.

Normally in close apposition with the eyeball, the puncta may be displaced as the result of chronic disease of the margin of the lid leading to displacement of the lid, as a whole, from ectropium and entropium, and indeed from any condition which mechanically draws or allows the lid to fall away from the globe. A temporary displacement is occasionally produced by acute inflammation of the conjunctiva, with attendant swelling, forcing the lid away from its proper position.

Displacement of the puncta may occasionally be remedied by treatment directed to the condition originally causing the malposition. Thus, if the displacement be due to entropium or ectropium, relief of such a condition tends to restore the punctum to its normal position. Usually in displaced puncta, however, direct surgical interference is necessary. This consists in artificially restoring the communication between the conjunctival sac and the canaliculus by slitting the latter to a greater or less extent, care being taken to make the slit towards the inner margin of the lid, so as to bring the new entrance in contact with the globe. In some cases all that is required is to enlarge the punctum in an antero-posterior direction; in others, it is necessary to slit the canaliculus throughout its entire length. The wound thus made should be kept from reuniting by probing for a few days.

Obliteration of the puncta is observed occasionally as the result of traumatism or disease; very rarely are they congenitally absent. In all such cases an effort is to be made to reach the canaliculus *de novo*, and the lumen having been found, the canaliculus is to be laid open, as before described.

In the majority of cases of lachrymal obstruction it is to be emphasized, that the immediate source of mischief is found within the canal below the sac, at the point of junction of the sac and duct. The obstruction at this point is most commonly due, in the first stage, to thickening of the membranous canal—which is normally narrowed there—from congestion or inflammation of the duct. The inflammation in many, perhaps most, cases is consecutive to disease within the nasal fossæ, in others it follows some form of conjunctivitis; the lachrymal canal being open at both ends, offers a ready means of invasion by pathogenic organisms from the nasal cavity and from the conjunctival sac.

The results of obstruction to the escape of the tears are various, the most serious usually being inflammation of the lachrymal sac, dacryocystitis. Abscess of the sac occasionally occurs, and this at times results in a permanent fistula, or the inflammatory process may be less violent, appearing as a chronic mucocele, subject to acute exacerbations.

Lachrymation with regurgitation of a small amount of clear fluid occasionally accompanies acute rhinorrhœa, dependent upon swelling of the soft parts within the bony canal, causing obstruction; in such a case the swelling may subside and the obstruction vanish, or the inflammation may become chronic and result in a permanent stricture. The diagnosis of obstruction below the sac is made by exerting pressure over the region of the sac and noting whether regurgitation of fluid takes place into the eye through the puncta. If such is the case, obstruction is shown to exist somewhere in the course of the drainage system below the sac; otherwise the pressure would force its contents onward through the duct into the nose. Regurgitation of pus, when it occurs, is usually indicative, if not pathognomonic, of organic stricture, which, as has been said, will usually be found at the junction of the sac and duct.

Epiphora, it should be borne in mind, is not always a sign of obstruction. True it is that lachrymation commonly results from obstruction, but in rare instances the overflow is due to hypersecretion from disease of the lachrymal gland, or to an irritation affecting the nasal mucous membrane, or it may be from inflammatory disease of the eye.

The retention of tears in the conjunctival sac is in itself a source of irritation and not infrequently productive of inflammations of considerable severity. The presence of pus due to regurgitation, however, is a source of much greater disturbance, at times leading to infection of the cornea, resulting in ulcer, abscess, or pannus, and rendering operations on the eye especially hazardous.

In an important group of cases the lachrymal obstruction is due to and kept up by intranasal disease, and in these treatment of the

naso-pharynx must precede any operative measures on the passage from above.

Such success has, particularly in recent times, attended the nasal treatment of this disorder that in practice it has become necessary to draw a line between those cases of epiphora which properly fall within the province of the ophthalmologist as distinguished from those falling within the province of the rhinologist. To the latter belong those cases, especially recent ones, coming on in the course of catarrh or accompanying the various forms of rhinitis with regurgitation of tears, mingled, perhaps, with flocculi of mucus, and all cases showing signs of obstruction of the nares. In short, every case of epiphora presenting symptoms of any nasal affection whatever should be subjected to rhinoscopic examination. To the ophthalmologist are to be assigned those cases of epiphora due to organic stricture of whatever origin, and which are usually characterized by regurgitation of pus. Where, in recent cases, there is reason to believe that the obstruction is caused by simple swelling, and organic stricture has not yet formed, as is more certainly ascertained if injections through the puncta can be made to reach the nose and pharynx, we may occasionally succeed in giving relief without operation, by constitutional treatment, reinforced by local counter-irritation over the sac, as by iodine paint applied between the canthus and the bridge of the nose.

In acute dacryocystitis the lower canaliculus should be laid open, and at the same time an opening is to be made in the wall of the sac sufficiently large to allow free drainage of its contents. *Poulticing should be avoided*, inviting, as it does, the formation of pus and encouraging its evacuation through the cheek, with danger of a permanent fistula.

The usual method of treating lachrymal obstruction within the duct heretofore practised has been by probing. The text-books describe this method at length, and hardly accord more than passing mention to any other. This method, it should be said, requires an indefinite length of time, is trying to both patient and surgeon, and is notoriously unsatisfactory in its results, recurrence being the rule almost as soon as the probing is omitted.

In a paper read before the Ophthalmic Section of the American Medical Association in 1892, and published in the journal of the Association, I described a method of internal stricturotomy, based upon that of Stilling, with a knife devised by me for that purpose. This stricturotome is a combined conical dilator and knife with a long flexible shank. The conical tip serves as an explorer, guide, and

dilator for the knife of which it is the prolongation, and also serves as a protector to the soft parts during the introduction and withdrawal of the instrument. It is to be borne in mind that in all manipulations within the canal great care must be exercised—just as in the treatment of stricture of the urethra—to avoid making a false passage.

The first step in operating consists in slitting the canaliculus, usually the lower. This can be most readily done with a small grooved director and Beer's knife. I have recently had made a modification in this knife in which the edge of the blade is ground down parallel with the back, beginning about one-quarter of an inch back from the point, the angular extremity only being sharpened. In making the incision two points are to be particularly observed: the cut should be made along the inner edge of the margin of the lid, by causing the edge of the knife to be directed somewhat backward towards the globe, in order that the groove may be favorably located to receive the tears; secondly, the opening into the sac must be made sufficiently large to permit the ready and free introduction of the necessary instruments and to insure an ample outlet for the tears. This result may be best accomplished with the point of the knife cutting in an upward direction before withdrawing the director. An obstructing ledge of tissue is usually found at the inner extremity of the groove formed by the floor of the canaliculus, and which offers an impediment to the passage of instruments and even of the tears. This obstruction is to be divided later by the stricturotome during its withdrawal at the close of the operation.

A curved probe is now to be introduced with its concavity outward as well as forward, and the location and calibre of the stricture determined.*

The probe being withdrawn, is replaced by the stricturotome, well oiled, special care being

* Bowman's probes are much improved by being furnished with conical tips. Where smaller sizes than five millimetres in circumference are required, the bulbous probes of Williams, of Boston, should be used.

taken to place the point of the instrument within the grasp of the stricture, when gentle, continuous pressure is to be made, the cone and blade being carried through and beyond the coarctation. Extreme delicacy and patience should be exercised, and more than one sitting may be required to complete this stage of the operation.

The incision is made by a drawing movement upward, *completely dividing the tissues at the strictured point*, even to the bone, and in at least two different directions. There is usually but slight bleeding, and, especially with cocaine, the pain is inconsiderable. Except in young children, it is not necessary to employ an anæsthetic.

The after-treatment consists in the introduction of a large leaden style, eight to ten millimetres in circumference, inserted at once after division of the stricture. The upper extremity of the style is bent at a right angle, and so reduced in size as to drop into the groove formed by the divided lower canaliculus, where it lies concealed. This is removed at first every day or two to allow the passage to be washed. At the end of a few weeks the style may be left out.

The use of the style is, however, not essential; thorough division of the coarctations may alone suffice; but experience in after-treatment, with and without the style, leads me to believe that while success is likely to attend both methods, the use of the style is, on the whole, to be preferred.

A case of obstruction treated by incision and the use of the style ordinarily recovers at once. The style may be worn for a few weeks more or less, but this is a matter of indifference to the patient, who is not aware of its presence when it is properly in place. *Probing for purposes of dilatation is never required after a successful operation.*

The advantage of stricturotomy over long-continued probing, as also over divulsion by extremely large probes, which is occasionally practised, both of which, at best, demand prolonged and painful treatment, is that *stricturotomy promises immediate and permanent relief with the minimum of pain and discomfort to the patient and of trouble and annoyance to the surgeon.*

So entirely satisfactory have been the results of treatment by this method during an experience with it of more than twenty years, that I feel warranted in stating my belief that stricturotomy is worthy to be substituted for all other instrumental procedures now in use for the treatment of stricture of the lachrymal duct.

In connection with this operation I wish to show a set of leaden lachrymal sounds. These

Two-thirds natural size.

sounds are intended for use in connection with lachrymal stricturotomy as explorers and pilots,—explorers as to the result of the operation, and as pilots for the introduction of the style. They are made of lead, rendering them sufficiently flexible to adapt themselves, to a certain extent, to the conformation of the canal, and so furnish an index as to the proper curvature and direction to be given to the style. They are provided with conical tips of the form which has been found so useful in steel urethral sounds, favoring their safe and easy introduction, and are readily controllable by reason of the sufficient handle. They are made in four sizes,—seven, eight, nine, and ten millimetres in circumference. A sound larger than ten millimetres is never required, and this is not so large as to endanger the bony walls by reason of its size.

THE EARLY MANAGEMENT OF CLUB-FOOT.

By De Forest Willard, M.D., Philadelphia, Pa.,
Surgeon to the Presbyterian Hospital and Clinical Professor of Orthopædic Surgery at the University of Pennsylvania.

I WILL utilize the half-dozen babies before you to-day, not only to demonstrate the different methods that may be employed for the rectification of congenital talipes, but to especially enforce the fact that the proper time for commencing the treatment of congenital club-foot is the very day of birth.

There seems to be such a wide-spread impression, even among well-educated members of the profession, that treatment should be delayed, that it is no uncommon thing to find that a child has been permitted to remain months,

or even years, unassisted. The recommendation of a physician to "wait until the child is older" frequently results in false security and permanent deformity. If any physician has been able to show benefit from this waiting-plan of treatment I should be most happy to learn the results.

A few moments' consideration will, I am sure, convince any practitioner that the first few weeks of life are the ones in which the tarsal bones are most soft and pliable, and more adaptable than at any other period of existence. Their growth during this period is far more rapid than at any subsequent space of time. Why they should be permitted to develop into permanent misshapen structures is beyond my comprehension, when slight force in the direction of rectification will rapidly adapt these bones to their proper relations.

I want to use these cases particularly as a test to enforce the point that the time for beginning the treatment of congenital club-foot is at *the hour of birth;* that if so commenced the results will in many cases dispense with operation, and in all cases the feet will be more flexible, elastic, and infinitely more useful than those which are permitted to go untreated. Naturally the parental mind shrinks from inflicting pain upon its offspring, particularly when it is anticipated that operative interference will be demanded, an operation to many individuals being synonymous with an amputation or some other terrible mutilation.

If the deformed foot of a babe is placed in a straight position and fixed there for months, the chances are that the bones and ligaments will be developed infinitely better than if it were allowed to distort for the first six months of life. Not that I argue for such fixation treatment, since it would result in great loss of muscular power; and yet, as I have said, the ultimate result would probably be better than with no treatment at all. We know that infants, even when rigidly strapped and bound down, as is done among some aboriginal tribes, develop in spite of the maltreatment.

Such permanent fixation, however, is entirely unnecessary, and I only wish to emphasize the fact that the foot must be made to grow into its natural position day by day, and that such a method can be easily secured by any practitioner by the simplest of measures. If the physician will bear in mind that very little force is required to rectify cases of infantile club-foot in the first week of life, and that the least pressure rectifies, he will certainly possess mechanical genius enough to maintain the foot in the corrected position.

A baby neglected for three months, with the weight of the clothing pressing upon its inturned foot, will have such alterations in the form of the tarsal bones that no subsequent treatment will be able absolutely to atone for this delay.

In all of the cases before you, none over three months of age, the astragalus is twisted and the distorted bone does not articulate properly. In two of the cases the cuboid also is prominent; the ligaments upon the outer side of the tarsus are lengthened, while those upon the inner side are correspondingly shortened. Maintained more or less in the straight position, the proper relation of the parts would have been established and proper growth insured.

An examination of this child, barely two weeks of age, will convince you that very slight pressure is required to bring the foot into fairly good position.

Of all curative measures manipulation stands first. When properly applied it possesses the power of cure in the majority of cases of infantile club-foot, provided it can be commenced at birth. Unfortunately, however, it requires an amount of patience and intelligence which is possessed by few mothers, even where they have the time to properly attend to it. Among the wealthy it may be delegated to nurses; it is even then impracticable. In certain cases it is entirely feasible to maintain this hand correction day and night for a year. Among the poor it is impossible. In a modified degree, however, it can be applied in all cases, and the method is curative just in proportion to the amount of time and skill given to it. In all cases, therefore, it should be insisted upon to its full extent. Even if it does not end in absolute correction of the deformity, it secures a good and flexible foot.

In the selection of various forms of retentive apparatus, the kind that will admit of manipulation while the apparatus is *in situ* is the one to be selected. Among the poorer classes,—in fact, among all classes,—the apparatus that requires the least expenditure of time and trouble will be the most successful. Even when the right retentive apparatus is employed, manipulation should always be practised at every dressing. Rectification, to the degree of rendering the individual plantigrade, is not important until the child reaches the walking age; hence these eight or ten months can be well spent in applying simple measures. The importance of this treatment will be at once appreciated when it is remembered that the shape attained by the tarsal bones during these months is lasting.

Here is a child, six weeks of age, with both feet so deformed that the first toes can be easily placed against the inner side of the leg, yet one pound of pressure is sufficient to straighten the foot. All of you, I am sure, will agree with me that if this foot could be held in position simply by pressure of one finger, the chances for the proper development of the tarsal bones would be far more favorable than in the distorted position.

In the second case the varus can be entirely corrected and the equinus almost so. In this case the deformity is greatest at the medio-tarsal joint,—that is, at the calcaneo-cuboid and the astragalo-scaphoid articulations. The loss of muscular power for the proper maintenance of this new position renders it necessary that some artificial means of rectification shall be employed.

Given a definite idea of the object to be obtained, it only remains for us to decide upon the method to be pursued.

For the one case I take a piece of sole-leather and cut it roughly into the shape of a bulky letter L. I throw it into water, and as soon as it is thoroughly moistened I mould the upright portion of it to the leg, and the horizontal part to the inner side of the foot, as this is a case of varus. I cut out a V-shaped piece, in order that it may adapt itself more nicely to the heel. I bind this in place with a muslin bandage. When hardened, it will retain its place and keep the foot in good position. If it slips off, I use adhesive-plaster strips.

The great difficulty in the application of any apparatus is the undeveloped heel of a young child. As the circumference of the foot is usually less than that of the leg, the absence of this projection of the foot makes it exceedingly difficult to maintain any splint or device or apparatus in position. All appliances are open to the same objections. They all become soiled with urine, and they interfere more or less with proper muscular action; but we must take the lesser of two evils. A little care and cleanliness will prevent excoriations.

On the other foot of the same child I mould, for comparison, a similarly shaped piece of thick binder's board. The next child has an almost similar condition of feet.

I speak first of these simple measures in order to show that the means of correction are at hand with any practitioner in any part of the country, and it is to be hoped that in all cases of club-foot immediate treatment will be commenced directly after birth. A very suitable wooden splint is made by nailing together, in the shape of a letter L, two pieces of board of the width of the foot. This talivert, when padded and fastened to the foot by adhesive plaster, or by a bandage, and the leg portion brought around and fastened behind the calf by adhesive strips, gives an immediate corrective force. Such an appliance certainly is within the reach of any one. Care must be taken to prevent excoriation. Sheet-lead, sheet-zinc, or sheet-tin are also cheap, and are to be found in every place. Card-board, stiff felt, or hatter's felt, can be easily shaped and moulded by water or by heat.

Where the patient is at a distance from the practitioner, and the dressings cannot be watched, better results will be obtained by plaster of Paris, carrying the bandage along the outside of the tarsus and then fixing it around the leg. Strips of adhesive plaster, carried in the same direction, you will at once see will accomplish the result desired, and there will then be no danger of slipping. A partial objection to such a procedure would at once suggest itself to your minds,—viz., that the bandage would soon be wet by urine, and would require careful watching lest excoriation occur. The dressing, however, is easily changed, and can be again applied by an intelligent mother or nurse. Another objection to its use is that while it produces lateral traction upon the shortened tendons, there is no forward stretching, which would be preferable.

There is really but little contraction of the gastrocnemius and soleus, or of the tibialis anticus; but these muscles, from their want of proper resistance by their natural opponents, the peroneals, have become gradually shortened on the one side, while from the paralysis and constant weakening of the fibres they have become elongated on the other.

It is difficult to restore tone to the relaxed muscles, as the paralysis is frequently more or less permanent on account of intrauterine nerve-changes. Both conditions must be borne in mind during treatment, since mechanical correction alone is entirely insufficient to give the necessary power to maintain the proper position. It is of prime importance, therefore, that, in addition to mechanical measures, the muscles shall be developed by massage, electricity, friction, etc., while stretching of the contracted muscles, ligaments, and fasciæ will be also necessary. What we fail to accomplish mechanically in the second part of the treatment can easily be secured surgically; hence I place the development of power in the paralyzed muscle first.

As we look at these feet, I think each one of you can suggest some method by which they

can be retained in better position. By giving any one of you a simple bandage, I think you would at once, by wetting the initial end and placing it over the head of the metatarsal bone, and then carrying it beneath the foot for one or two turns, easily see in the process a power of rectifying this deformity by simple pressure.

To this child I apply a posterior trough-shaped felt splint made for this purpose, holding it in position by strips of adhesive plaster.

For the fourth case, which is a patient living in the country, I apply to the foot and leg a plaster-of-Paris dressing. The foot is first enveloped in a flannel roller, and the method of application is important. Starting at the ball of the toe with the bandage, it runs underneath the foot and completely encircles it, then passes over the outer side of the tarsus, thence to the inner malleolus, around the leg, and returns like a figure of 8. To a large degree the direction of the bandage rectifies the deformity, if the surgeon is accustomed to this work. Plaster of Paris can be applied over this bandage, running in the same direction and thoroughly fixing the foot, while the toes of the child are firmly held in position. Gypsum constitutes so important a part of dressings at the present time, not only in deformities, but in fractures and other conditions, that the physician should keep this material constantly on hand. A good quality of dental plaster is cheap, and if kept in a tin can in a dry place will last for a long time. Coarse, open-meshed cheese-cloth, which should be cut into long strips, or crinoline with the sizing removed, makes the best basis for bandages, as either of these materials will hold in their meshes a large quantity of gypsum. Although they are much better when freshly made, yet when loosely rolled and kept in a dry place, they will remain serviceable and in good condition for many weeks; in fact, I have tested some which was two years of age, which set quickly and remained strong. However, the keeping of bandages is not to be advised. They can be refreshened by baking. In order to wet the bandage properly it should be placed on end and permitted to take its own time, the completion of which will be determined by the cessation of the escape of air-bubbles from the bandage.

The bubbling of air having ceased, the bandage is squeezed moderately dry, and the roller is then carried in the direction indicated for a flannel bandage, the toes being grasped with one hand by an assistant, while his other hand steadies the knee and leg of the patient, the foot being brought into as straight a position as the tissues will easily bear. If the full correction be made at the first dressing, the pressure will probably be unbearable, time will be lost, and the patient's friends will become disgusted and discouraged.

The number of turns of the bandage will depend upon the age of the child. While it is in arms, it should be no heavier than to prevent breakage.

The manner of holding the foot is important. If pressure be made with the points of the fingers, or in a careless manner, during the setting of the plaster, a depression will result, which, after the hardening of the gypsum, will be sufficient to cause great pain and very probably sloughing. The correcting force should therefore be applied in the manner directed, and while it is slightly tedious for the assistant to grasp the toes in this manner, yet in these young cases it is very easily done.

The addition of a little salt to the warm water used for wetting the bandage will facilitate the rapidity of the setting process. The plaster should become hard in a few minutes. The surgeon will save himself much time and trouble by making, just before the cast is thoroughly hard, a slit with his penknife down the front of the cast, particularly in the thick portion just in front of the ankle-joint, as subsequent section at the latter point with a saw or knife is exceedingly tedious. This line of division need not extend to the top or lower portion of the dressing, as it is easily divided later.

In cases where co-operation of the mother is doubtful, it is well to leave the cast in such a condition that it cannot be removed. Where one can be certain, however, that instructions will be obeyed, the cast can be opened so that it may be removed and the foot manipulated and stretched once or twice daily, which greatly aids in producing a flexible and useful foot. Silicate of soda, starch, chalk, gum, or other rigid material may be used for the same purpose. As silicate is slower in its setting process, it is sometimes well to apply over the dressing a few turns of gypsum bandage, which can be removed on the following day.

Any rigid bandage is open to the objection that it prevents manipulation, which is all-important; but in the class of cases where the assistance of the mother cannot be expected, it forms a most valuable assistant to the efforts of the surgeon. The bandage should be removed every two or three weeks, the parts manipulated and brought into a little straighter position, and refixed by another bandage. The cure will be rapid, and the development of the

muscles will be more easily secured in the future than can be the moulding of the deformed bony structures which will otherwise be necessary.

This dressing can be varnished or shellacked, and should be protected about the top with rubber cloth or oil silk. The great difficulty with all these dressings is, first, that they need constant watching to maintain them in proper position, and, second, and more important, manipulation cannot be carried on properly, and manipulation, above all things, is the one successful element of treatment that can secure mobility, flexion, and an approximately normal foot. Of course, the appliances mentioned can be removed occasionally and manipulation instituted, but for scientific treatment manipulation should be performed many times daily. An apparatus, therefore, which will permit of such manipulation without the loss of time involved in the removal of appliances is essential, since the majority of poor mothers can ill afford to spare this time.

A good apparatus for young children consists of a closely-fitting leather shoe opening to the toes. The sole at the shank for one-third of an inch consists of soft upper leather instead of ordinary sole leather. This soft shank permits movements in all directions, and is a cheap substitute for a ball-and-socket joint. To this shoe should be attached firmly by a plate a stirrup with uprights reaching above or below the knee, as necessary. The anterior part of the shoe can be moved readily by the hand, and stretching of the contracted tissue twenty times a day is possible without removing it from the foot. Steady traction force which will act whether the child is awake or asleep can be maintained by a catgut cord fastened opposite the little toe, and carried outward and upward through an eyelet in an arm extending forward and outward from the outer side of the stirrup. To this catgut cord is attached a strip of elastic fastened to a button or buckle on the outer upright near the knee. The same idea is accomplished by elastic cords and by the ball-and-socket joint of Sayre's appliance; also by the appliance of Chance.

Of course, a proper apparatus is most effective when it can be afforded, but a simple appliance accomplishes the same result. Lacing strips of rubber printer's blanket round the ball of the foot and the calf of the leg, and then connecting the two parts by an elastic strap, or the apparatus of Barwell, which supplies elastic force to take the place of the weakened peroneals, are both useful devices. Farwell's dressing, which acts in a similar manner, has the decided disadvantage that it must remain permanently in place. With young children it becomes speedily soiled, and is very apt to excoriate the flesh. This dressing consists of an eyelet in a strip of hard material, as tin, which strip is fastened to the outside of the leg by means of adhesive plaster and bandages. A similar eyelet is fastened about the metatarsus of the foot by a many-tailed strip of adhesive plaster. An elastic cord extends from the eyelet opposite the fifth metatarsal to a point opposite the head of the fibula. The chains and hooks in this apparatus also render it objectionable for young children, although the principle is excellent. An ordinary walking shoe with stiff sole and an elastic strap from the anterior part of the foot to the outer upright near the knee will also assist in overcoming equinus, but it, of course, has little effect upon the varus. Beeley's, Smith's, and many other forms of apparatus act upon this principle. Another apparatus, which does not give elastic force, and does not permit of manipulation when *in situ*, is Gemrig's or Kolbe's modification of Scarpa's shoe, which acts upon the varus by a worm-screw in the sole, and upon the equinus by screw-power acting in front of the ankle. Care must be taken that it does not produce sloughs.

All these appliances require the most careful fitting and adaptation of the parts, otherwise the foot will turn in the shoe, or will slip from its bed. The utmost care should be used to maintain the heel firmly in position. Extension apparatus and forcible extension of the contracted tissues, of which Schaffer's shoe may be taken as a type, are beneficial if properly applied and cared for. Taylor's shoe, Beeley's and Bradford's apparatus, are also good, but none of them can correct a deformity except they are properly fitted and closely watched.

It is only necessary to bear in mind the fact, already emphasized, that it is entirely unnecessary to secure the plantigrade position before the end of, at least, the tenth month.

This treatment can be continued, as a rule, until the child reaches the age of eight or nine months, when, if the contracted tissues are still dense, and especially if spasm is developed by point-pressure, surgical means will become necessary. It is ordinarily perfectly correct to defer the operative proceedings until this time. If the equinus, however, is great, and the heel so small that apparatus cannot be readily kept in position earlier, section, at least of tendo Achillis, is advisable. The weight of the body, if brought upon the outer sides of the feet, will rapidly tend to increase the deformity, and

especially to alter the shape of the bones. The child, therefore, should not be permitted to stand erect with its feet in an abnormal position.

We will not here discuss operative measures further than to say that every contracted tissue should be divided to such an extent that forcible manipulation and moulding will at once permit the foot to be brought freely down upon the sole in walking, and thus secure at every step the most valuable corrective manipulation and pressure that can possibly be obtained. The natural activity of the child will speedily serve as a most valuable agent in forming the tarsal bones, and is far superior to any form of apparatus. Walking with the foot in proper position is, therefore, both a valuable gymnastic exercise for the muscles and a mechanical remedial measure.

As infantile cases only are intended to be considered at this lecture, the consideration of further operative means will be postponed to a future occasion.

CONCLUSIONS.

1. The first month of life is the period of greatest growth, and to neglect treatment of club-foot during this time is to permit the bony and soft tissues to become permanently misshapen.

2. Rectification should be commenced from birth by various simple measures.

3. Correction can be accomplished by a variety of dressings.

4. Manipulation is exceedingly important for the production of a flexible foot.

5. Apparatus should be applied as soon as the foot and leg are in position for its application.

6. Rectification and manipulation should be continued up to the age when the infant is ready to walk, at which time, if the foot cannot be placed upon the sole firmly, operative measures should be instituted.

TREATMENT OF ABORTION FOLLOWED BY SEPSIS.

CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA HOSPITAL, DECEMBER 10, 1892.

BY E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynæcology, Jefferson Medical College; Obstetrician to the Philadelphia Hospital; Gynæcologist to St. Joseph's Hospital.

GENTLEMEN:—This patient is twenty-five years of age; father died of pneumonia, mother of Bright's disease. Puberty occurred at fourteen, menstruation not painful. Flow was regular, lasting five days, normal in amount. During the last three or four years has been painful. She had a child two weeks ago at six months. Labor natural; child still-born. She got up on the twelfth day and came to Philadelphia from Cincinnati. Stayed all night at the station-house, from which she was brought to the hospital. She complains of pain in both sides of the abdomen and discharge from the vagina; bowels constipated, while the appetite is good; feels weak, but sleeps well. I have not examined her, and know no more of her history than is here given. She suffers from pain on both sides of the abdomen. The belly is flat, presenting no indication of distention. With such a history we would not expect to find any severe or active inflammation of the peritoneal cavity. There is no marked tenderness upon palpation, although she complains a little when deep pressure is made over the right inguinal region. Her uterus is still somewhat large; not more so, however, than we would expect to find at this period of convalescence in a woman who had taken so little care of herself. The organ is anteverted and perfectly movable. There is still some bloody discharge. A bloody flow may be prolonged after the delivery of the patient by a variety of conditions. Not infrequently hemorrhage at the end of two or three weeks is induced by displacement of the uterus, more particularly from retroversion of the organ. It may take place from a portion of the retained placenta, the separation of which gives rise to hemorrhage. It is also a symptom consequent upon endometritis, and this is probably the explanation in this patient. She has a slight inflammation of the mucous membrane, from imprudence in travelling over six hundred miles within twelve days after delivery. The want of care during this time has induced the inflammation which causes this symptom. Inflammation of a limited portion of the endometrium would give rise to hemorrhage; thus, the site of the placenta may be the seat of inflammation without other portions being involved. It should not be forgotten that hemorrhage may result from constitutional conditions. Where the patient is the victim of heart-disease, Bright's disease, or disordered portal circulation from obstructed liver, hemorrhage, sometimes of profuse character, may be present. In such patients, however, it is more likely to take place immediately following confinement, and in the earlier part of the convalescence. Inflammation of the pelvic organs other than of the uterus, interfering with its circulation, may cause uterine hemorrhage. Thus, it is not infrequently the result of pelvic exudation from an inflammation in the tube or ovary.

The causes here mentioned are sufficient to indicate that we are not safe in any patient in simply prescribing for the symptom, but should endeavor as thoroughly as possible to arrive at a definite cause and treat it.

That it is not due to uterine displacement in this patient is evident by physical examination; the same discloses the absence of inflammatory exudation in the pelvis. There is no mass of exudation, no fixation of the uterus, no elevation of temperature, all of which would be present if such conditions existed. Her temperature has been high at no time, maximum temperature being 99° F.; it is now normal; so that we have no active inflammation about the uterus to obstruct the circulation and be a cause of hemorrhage. Careful interrogation of the action of the various organs indicates absence of disease of the kidneys, liver, or heart, thus precluding its occurrence from constitutional conditions. There are patients, it is true, in whom there is a predisposition to hemorrhage, but the absence of any history of this kind in the previous life of this patient would preclude this origin. There is, however, an engorged condition of the endometrium resulting from the exposure to which she has been subjected so recently after her confinement, and without doubt to this is due the bloody discharge she has had since her delivery. If we had found her suffering from a retrodisplacement of the uterus, the indication would have been to correct this by replacing the uterus in its normal position and maintaining it there by the introduction of a pessary. In the absence of any marked indications of inflammatory trouble, the absence of elevation of temperature, I do not feel that it is necessary to subject her to active manipulation. I see no necessity for exploring the cavity of the uterus for retained portions of placenta. There is no offensive odor to the discharge, the uterus is not larger than we would expect to find it under the circumstances, and the hemorrhage is not of sufficiently severe character to demand exploration. If, however, this hemorrhage should continue, become more severe, or be associated with pain or inflammatory symptoms, we would certainly feel it desirable to explore the cavity of the uterus to determine whether there was any retained mass within. As this exploration, in the majority of cases, is attended with a certain amount of pain and discomfort, causes the patient to be nervous, to contract her muscles, and render them rigid, increasing the difficulty of the procedure, it is better to place her under the influence of an anæsthetic, and thus secure relaxation of the muscles and the ability to more thoroughly and carefully explore the cavity. The ordinary anæsthetics, such as ether and chloroform, require a considerable length of time for their administration, and are looked upon by the patient as rather formidable agents. Not unfrequently she is very sick for a length of time following their use. For these reasons an anæsthetic that acts quickly and passes off quickly is much to be desired, and we have such a one in the bromide of ethyl, an agent which serves an exceedingly useful purpose where an anæsthetic is wanted for a short time. A few inspirations of the drug place the patient so that her muscles are relaxed, pain is removed, and the cavity of the uterus can be explored to the fundus. I am quite aware that in advocating this drug I am bringing to your attention one that is considered an exceedingly dangerous agent. It was introduced by Dr. Levis in this city a number of years ago, and, unfortunately, was administered by him to a patient suffering from disease of the lungs. This patient had a number of pulmonary cavities, and during administration of the anæsthetic stopped breathing. Artificial respiration was at once begun, and by so doing the discharges were pressed out into the air-passages, completely occluding them, and the patient died. As a result, the use of the drug was interdicted in the Pennsylvania Hospital, and has since been considered as dangerous. Its use has been continued by a number of men, particularly by Prince, of St. Louis, and Chisholm, of Baltimore, who have given it in a large number of cases, one advocating it as *the* anæsthetic for operations on the eye. I have used the drug for fifteen years in every case of labor I have attended, in all examinations where it is desirable that an anæsthetic should be used, which comprises several hundred cases, and have yet to see the first patient who has presented the least indication of danger from its use. It is an anæsthetic which acts quickly and is much less likely to give rise to sickness of the patient. It can be given by the physician in his office, and the patient in ten minutes be allowed to go out. In the use of an ordinary anæsthetic the patient generally would not be ready to leave the office for two or three hours. So I say for the examination of patients we have no better agent than the bromide of ethyl. Now, its value is, in that it relaxes the muscles, removes the nervous fear of the patient, enables the exploration of the entire cavity of the pelvis or uterus, and affords an opportunity for removing any foreign body that may be contained therein. The presence

of growths within the walls of the uterus may cause hemorrhage after delivery. These sometimes can be removed by enucleation.

How shall we treat this patient? We will direct that she shall be given a douche of hot water,—a quart to a gallon twice in twenty-four hours. She shall be given drugs which will decrease the amount of blood sent into the uterus; fluid extract of ergot, a drachm three times a day; the bowels kept perfectly regular; given a good nutritious diet; in conjunction with which we may give, for its alterative effect upon the structures, chlorate of potassium, 5 to 10 grains three times in the twenty-four hours. This course will be all, I think, that will be necessary to complete the process of involution and reduce this uterus to its normal size. But suppose she continues to have a bloody discharge, that this discharge becomes offensive, indicating possibly the retention of portions of the placenta, and that a septic process is developing or present. Under such circumstances we would explore the uterine cavity,—not only explore it, but carefully curette it. It is the usual custom, where symptoms of sepsis follow delivery, to begin with intrauterine injections. This is, however, an ineffective process for accomplishing the end. Although injections may be frequently given, it must be remembered they can at best only sterilize the surfaces with which they come in contact. This surface is covered with decomposing *débris*, beneath which the germs may rapidly multiply, forming ptomaines, which are absorbed, producing continuous elevation of temperature. The uterus after the delivery of the patient is large and flabby. The drainage from it is exceedingly defective, and there is more or less retention within its cavity of discharge which does not make its exit. The washing out of the uterus removes only the superficial *débris* and not that more firmly attached to the wall. The uterine surfaces lie in contact with each other. The elevation of temperature promotes the multiplication, while the retained *débris* affords nutritious soil for the development of germs, and we have the patient consequently subjected to high temperature and the existence of septic processes. In such cases the inflammatory trouble rapidly extends from the uterine mucous membrane to that of the tubes, ovaries, and peritoneal cavity. Of course the process by which the poison is conveyed is not only through the tubes, which is probably the least dangerous track it can pursue, but it also travels through the blood-vessels and lymphatics. We not unfrequently have inflammatory conditions in the pelvis, in which the lymphatic glands become the seat of infection, and within which abscesses form, and patients die from long-continued septic processes. On the other hand, we will find the uterine walls the seat of multiple abscesses, or, again, that the blood-vessels carry septic material into the broad ligaments on either side, which become extensively involved, producing purulent infiltration, as we have seen in patients operated on in the Philadelphia Hospital, in whom pus was found behind the colon wall above the pelvis. These septic processes travel in this way as well as through the tubes, giving rise to extensive infiltration. Post-mortem examination may show the broad ligament extensively involved, while the tube remains free. The disease may travel through the tube itself to the peritoneal cavity, affording a source for the development of an abscess in a sensitive ovary, while the tube remains apparently unaffected. It has been simply the channel through which the inflammation has been conveyed. The rapidity with which this process may be carried on, the influence it has upon the future of the individual, causing death, or sometimes worse than death, by crippled conditions of the functions of her organs, renders it important that we should attack the disease promptly, that we should not wait for the processes of development until they have become of such a character that they can no longer be remedied by superficial operation; consequently, where sepsis shows itself during the convalescence of the patient, we should at once explore the cavity of the uterus. We should not be content with exploration and injections, but we should use measures to remove the material in which the development and multiplication of germs takes place. This is just as true where sepsis develops after abortion as where it follows the delivery at full term. Examination may reveal that the neck of the uterus is contracted, and we are unable to determine how much material is locked up in the cavity of the organ.

How shall we proceed? By all means place the patient under an anæsthetic, dilate the uterus with bougies, and afterwards use the curette. In the use of this instrument in ordinary cases such as this, after confinement, the uterus is sufficiently relaxed to permit of its dilatation with the finger; the finger can be passed into the cavity until it reaches the fundus. After exploration with the finger, we should then use the curette, preferring the sharp instrument, using it thoroughly and carefully. It must be remembered that the wall of the uterus is softened by the processes:

first, of pregnancy; second, retrogressive processes following; and, third, inflammation during convalescence; so that in the use of the curette it must be done carefully, not injudiciously driving the instrument into the cavity of the organ and through its walls, but by holding the instrument as you would a pen, passing it over the uterus on all sides, so as to go over and scrape the entire cavity of the organ. In a woman where the uterus is large, a larger curette will be most serviceable, using a sharp, fenestrated instrument. This should be followed by an intrauterine douche of sublimate solution (1 to 2000) by means of a double catheter, so that by no possibility will the fluid accumulate in the uterus and its outlet become obstructed, and thus distend the Fallopian tubes, escaping into the abdominal cavity.

The sublimate solution should be followed by an irrigation of sterilized water. A sufficient amount of mercury may be retained within the uterus to give rise to the poisonous effects of the drug. Washing it, however, with sterilized water precludes this possibility. Having irrigated the cavity of the uterus, we do not simply depend upon nature to drain an infected cavity, but having sterilized it as thoroughly as we can, we then pass into the cavity a twist of iodoform gauze, carrying it to the fundus of the organ. The advantage is that it keeps these inflamed surfaces apart, consequently there is not the opportunity for the subsequent infection and the redevelopment of septic processes. It acts as a capillary drain and promotes free evacuation from the uterus. By its influence upon the uterine walls it produces a serous exudation, and thus aids in elimination. By its presence as a foreign body it stimulates contraction of the uterus, the activity of the circulation in the walls of the uterus decreases the quantity of blood, and we have, consequently, from the presence of this rope of gauze, a melting down of the uterus and the process of involution is more rapidly accomplished, the gauze tampon thus doing good in a variety of ways: first, keeping the surfaces apart; second, promoting drainage; third, causing a flow of serum from the walls of the uterus rather than the absorption and taking up of the products and carrying them into the circulation; fourth, by its influence upon the uterus causes its walls to contract, and in this way more readily decreases its size. Where the cavity of the organ has been thoroughly sterilized, the drain may be permitted to remain seventy-two hours. It should then be removed, the parts again thoroughly irrigated, and a similar drain introduced. By this course we will find the patients rapidly recover. The process which threatened to be a severe one is arrested and limited to the uterus; we have our patient saved from the danger of very serious conditions. But supposing trouble has gone beyond the uterus; that infectious processes have already developed before the operation has been done. We will probably find then that the infection is of such a character that nature is no longer able to throw it off, and will develop trouble, requiring more active measures for its relief.

A patient came under my observation some time ago in a neighboring city, who, in the birth of her first child, had had a slight laceration of the perineum. A week later, when I saw her, she had a temperature of 106° F. It had gradually reached this elevation during the week. I was asked to see her with a view of determining whether there was anything within the peritoneal cavity to explain the abnormal symptoms. I palpated the abdomen thoroughly, and through the vagina found the uterus movable; no inflammatory condition of the broad ligaments on either side. Intrauterine injections had already been given from the time the elevation of temperature began. Introducing my finger into the uterus, I found a marked flexion just above the internal os, and as soon as this was dilated an exceedingly offensive odor was recognized. I then passed my finger to the fundus of the uterus, and succeeded with it and a curette in removing a couple of ounces of putrid material. The uterus was thoroughly irrigated with sterilized water, and a rope of gauze carried to the fundus. The temperature subsided at once and remained normal for fifty-four hours. After the gauze was removed, it then for three weeks varied from 99° to 101° F. The patient seemed to be doing fairly well. At the end of the fourth week I saw this patient again with a temperature of 106° F. I could find no indication of pelvic inflammation, nothing that seemed to point to a diseased condition of the tubes or ovaries. The uterus was again dilated, this time without finding anything within its cavity to explain the symptoms. With the hope that the condition might be a temporary one, the patient was prescribed for and left forty-eight hours, to await developments. At the end of thirty-six hours I was again summoned to see her. She then had a temperature of 104⅘° F., and had frequent chills. She was etherized, and the abdomen opened with a view of ascertaining, if possible, the septic centre. Upon opening the abdomen, the uterus was found per-

fectly free and movable; there was not the slightest indication of any infiltration or breaking down of its walls. The entire surface of the uterus was thoroughly inspected, and without the least sign of anything as an explanation of the trouble. Both tubes were apparently healthy and were not enlarged. The left tube slightly reddened, and in its abdominal end a piece of lymph projected. The right tube was healthy; the right ovary was probably twice its normal size, presenting an appearance of œdema. The left ovary was four times its normal size, and on its anterior surface a piece of lymph similar to that which was projecting from the end of the tube was found. Both ovaries were removed, and upon opening them the left was found to contain a teaspoonful of greenish, offensive pus. The temperature rapidly subsided following the operation, and the convalescence was uninterrupted. She is now in the best of health.

Here was a patient in whom dilatation and curetting of the uterus had not been performed sufficiently early to prevent the disease extending beyond the uterus; one also in whom the peculiarity was that the tube had acted simply as a means of communication. The left ovary was probably the one in which the corpus luteum of pregnancy existed, and, through this, was more sensitive and more readily infected. The presence of the lymph within the tube and on the side of the ovary led me to believe that the tube was the channel of communication. This was apparently not one of the causes of extensive inflammation, but simply the passage of the infectious material through the uninvolved tube to the sensitive ovary, in which it found a suitable nidus for its development.

In my experience in this hospital, I remember, shortly after beginning my service as one of the visiting staff, a woman who had an attack of sepsis, and ran apparently through the course of the disease and was convalescent. During the convalescence the temperature remained a little high; pulse always more rapid than normal. The temperature had been for nearly four weeks a little above normal. She had been going about, when suddenly she was taken with a state of collapse and died within forty-eight hours. It was found that the uterus had been the site of a number of small abscesses, and the fundus had consequently sloughed off, leaving the organ in the shape of a funnel. This is one of those cases in which the disease had occurred in the uterus itself, had travelled into the uterine sinuses, had developed multiple abscesses, and these had subsequently caused the destruction of the fundus of the organ. In my experience, in investigation of this subject, those cases in which the disease is most active, in which the symptoms are most virulent, are cases in which the disease has travelled through the blood-vessels or the lymphatics.

A case occurred during my term of resident in this house, where a woman had an elevation of temperature running up to 107° F. This was reduced by placing her in an ice-pack, but in a few hours it would again rise. On her death the only pathological condition found was a teaspoonful of pus in the uterine sinuses of one side. In a case that occurred in my experience within the last year, a woman in this city, in whom there had been a development of sepsis, following confinement, had been subjected three or four days after delivery to curetting. In seeing the patient at the end of a week, and finding the curetting had been done without an anæsthetic, that the perineum had been sutured, and these sutures had not been removed, I felt it was possible there might be still material within the uterus which caused the symptoms. The patient was given an anæsthetic, sutures removed, the vagina sterilized, and the cavity of the uterus explored. An ounce of putrid material was removed by the curette. Gauze was packed into the uterus, and the temperature subsided, running nearly to normal, but within a few hours again rose. At the end of forty-eight hours the abdomen was opened with a view of ascertaining the source of the poison, and it was found that a number of multiple abscesses were situated in the uterine sinuses. The uterus consequently was removed, but the patient died within twenty-four hours, still with a high temperature. Here was another case in which the poison travelled beyond the uterine mucous membrane. The infection was a rapid one; it had passed through the blood-vessels. Its influence on the health of the individual was profound and the progress of the disease rapid.

This series of cases is related with a view of impressing upon you the importance of the subject we have now under consideration, that of treating the disease before it has passed beyond the uterus into the surrounding structures, and of the greater danger where it travels through the blood-vessels and lymphatics. Where the disease travels into the tubes, nature very promptly seals up the abdominal end, and we have resulting an abscess which has its barriers. There is, of course, considerable matting together of the tissues about it. We will have extensive infiltration before

nature has imposed her barriers. While pus is here, it is within limits, beyond which nature will not permit it to go, and this is the safest form of the development of sepsis, and the one which is most readily relieved and for which there are the greatest chances for cure. No one has practised abdominal work who has not seen numbers of cases in which the inflammatory trouble has extended through the appendages,—patients in whom there have been development of pyosalpinx, formation of pus within the pelvis, possibly rupture of the tube; but nature has imposed barriers, so that although the tube may rupture, it escapes into Douglas's pouch, forming a new pus-cavity. These are the most amenable cases for treatment.

With regard to treatment, there is a difference of opinion as to the methods of procedure. I believe those who advocate reaching pus collections of this kind through the pelvis, where there is an extensive inflammation, are proceeding upon the most scientific plan. Where we have a pus collection in one or the other tube, with possibly considerable purulent effusion in Douglas's pouch, I believe the proper plan in such cases is to open through the vagina rather than through the abdomen. I do not mean, however, that this is necessarily a curative operation. It is only a palliative one. Its object is to relieve the patient of the load she is carrying at the time and prevent its fatal results. A secondary operation may be necessary to break up the adhesions and remove the pus-sacs; but where we have a patient suffering from pelvic accumulation, with a large quantity of pus, and nature has thrown out the barriers, the better plan of procedure is to respect these and open into the pelvis, making free opening, wash out the discharge, break up possible sacs where they can be reached, and then, after thoroughly washing out the cavity with sterilized water and peroxide of hydrogen, we may pack with iodoform gauze, in this way following out nature's course. As the barriers have shut off entrance into the larger cavity, we are enabled to relieve the more active condition and resort subsequently to an operation for the removal of the diseased masses when the condition of the patient is better. I have operated on one or two patients where the operation resulted fatally, in whom I am satisfied, if I had used this procedure, the results would have been different. With a large accumulation in the pelvis, the abdominal cavity is opened, adhesions are broken up, the entire cavity is more or less brought in contact with the fluid, and the result is, you have your patient in an enfeebled condition, endangered by the shock of breaking up these adhesions by contact of excessively infectious material, with large absorbing surfaces, and the patient, if she does not die from shock, runs serious risk from the subsequent infection; so it is better not to interfere with these until the large source of poison has been removed.

ENTEROCLYSIS IN THE SUMMER DIARRHŒA OF CHILDREN, WITH A REPORT OF SEVENTY-EIGHT CASES, TOGETHER WITH THE RESULTS OF LABORATORY INVESTIGATIONS.

BEING A THESIS TO WHICH WAS AWARDED THE PRIZE OFFERED BY THE CHAIR OF MEDICINE IN THE JEFFERSON MEDICAL COLLEGE, MAY, 1893.

BY R. E. MÜLLER, B.Sc., M.D.,
Assistant Physician in the Children's Dispensary, Jefferson Medical College Hospital.

(Concluded from page 438.)

RÉSUMÉ.

A SIMPLE classification of the summer diarrhœas of children would divide them into two kinds: first, the simple; second, the infectious.

The simple diarrhœas constitute a small percentage of the cases. They are symptomatic of derangements of function in the intestinal tract unaccompanied by fever, and without involvement of the stomach. Usually they set in suddenly. The infant becomes restless; the stools become frequent, watery, yellow or grayish in color, sometimes green. Recovery takes place in a few days, or the trouble develops into a more serious form. All of the cases of this group respond readily to intestinal irrigation with cool or tepid water, or often to enteroclysis with a saline solution, followed by a restricted diet. For unloading the bowels, castor oil (of which a teaspoonful may be given to an infant a year old) is useful, but it requires four or five hours to act. When, on the one hand, the stools are grayish and lumpy, or, on the other hand, are watery and of offensive odor, from five to ten grains of magnesium sulphate, dissolved in a little warm water and repeated every hour for three or four doses, has been found to act advantageously in every instance, after the bowel had been cleansed once or twice by irrigation. Magnesium sulphate depletes the system, and, as Professor Hare says, "bleeds the patient into the bowel." This treatment is followed by large doses of a pure preparation of bismuth subnitrate.

If the child be at the breast, the intervals of nursing are lengthened and the time at the

breast is shortened until the diarrhœa has been controlled. If fed artificially, the diet is restricted to sterilized milk, from two to four ounces being given every two hours. After the diarrhœa has been controlled, a careful regulation of the diet is necessary to prevent recurrence. It was found that infants fed upon cow's milk, Nestlé's or Mellin's food, or any of the many other preparations, could readily have their diet changed to sterilized milk without the development of gastric disturbance. Of course, there were isolated cases in which it was decided to adhere to the infant's habitual nourishment, whether this was cow's milk or an artificial preparation; but in at least ninety-five per cent. of all cases that came under observation sterilized milk was substituted without the development of gastric or intestinal disorders.

The diarrhœas of the second class are designated infectious. They may be subdivided into three forms,—namely, the mild, the severe, and the choleroid. These forms principally occur in children fed artificially during the hot summer months. They depend, according to Meigs and Pepper (G), upon ptomaine-poisoning, the toxic matters being formed either in the milk, outside of the body, or the intestinal tract, from bacteria introduced with milk. Children weakened by previous attacks of simple diarrhœa, or by inherited syphilitic or tuberculous taint, seem most liable to the disease.

The mild form presents, during the first day or two, all the symptoms of simple diarrhœa. The onset is gradual. The stools, as in simple diarrhœa, during the first day or two, are of thin consistency, and of yellow or grayish color; later, they generally turn green and contain mucus. The child is fretful, the appetite is lost, and the tongue presents a thin white coating. The temperature is subfebrile, the child loses flesh and becomes pale. There may be slight gastric disturbance.

In the severe form the onset is sudden, and there is great prostration from the beginning. The temperature rises quickly to 103° or 104° F., and the sudden rise is often followed by convulsions. These symptoms last for a few hours, when vomiting commences. The vomited matter, consisting at first of the undigested contents of the stomach, is soon mixed with mucous or bilious matter. There may be three or four stools an hour. Sometimes the vomiting is either followed or preceded by diarrhœa; the color of the stools may be any shade of gray, green, yellow, or brown. There may be convulsions at the outset.

In the choleroid form all of the preceding symptoms are intensified. The temperature is elevated from the very first, and soon rises to from 103° to 105° F., sometimes reaching even 108° F. The pulse becomes feeble and weak, towards the end irregular and imperceptible. Thirst is extreme. The copious and frequent stools are at first pale green, yellow, or brown, and very offensive; but as the disorder advances the discharge from the bowels becomes more watery and odorless, and often like rice-water. At the onset of the disease the volume of the dejecta is often so great that one evacuation will saturate the napkin of the child and completely wet through the bedding. With the advance of the disease the number of stools increases, but the quantity diminishes. There is great prostration from the beginning. In these severe cases the indications are, therefore, first, the removal of the cause; second, the support of the patient until the ptomaines are eliminated or neutralized.

The first indication embraces the sterilization of the milk and the removal from the intestinal canal of its fermenting contents by irrigation. The sterilization of milk is brought about by keeping it at a temperature of 167° F. for half an hour in an appropriate apparatus. Afterwards it is poured into a number of sterilized four-ounce bottles, well closed with corks, wrapped with cotton. The bottles are then placed on ice. By this process all the germs in the milk are destroyed, and the nutritive qualities of the milk are not interfered with.

The second indication embraces the support of the patient until the toxic matters are thrown off. Alcohol in the form of whiskey or brandy is used in almost all cases. Shortly after the admission of the child, all kinds of farinaceous and milk foods are entirely withheld for at least twenty-four or thirty-six hours, if vomiting and diarrhœa are among the prominent symptoms; while brandy or whiskey is employed in doses of five or ten drops every half-hour, until the violent symptoms subside. As the febrile condition is ameliorated, and the stomach becomes tolerant, though the diarrhœa still persists, bismuth subnitrate from grains 5 to grains 15 or pepsin from grains 2 to grains 5 is given every three hours. The patient is allowed a small quantity of sterilized milk, the amount of which is gradually increased to four ounces every two hours. If the child is nursed at the breast, the intervals are always systematically observed. Stimulants are frequently repeated in small, divided doses. In urgent cases, in accordance with the age of the child, the doses may be repeated every hour or every half-hour. As soon as the symptoms for which alcohol is given begin to moderate, the quantity is reduced and

smaller doses are given at longer intervals. In cases of collapse alcohol was not found sufficient, and external heat to the extremities, spice-bags to the abdomen, and atropine sulphate hypodermically, are to be used. In high fever nothing seems so grateful to a sick child as small pieces of ice. The little patient ceases to cry and struggle if cold water or ice be given freely, the greedy swallowing of which shows how much of the distress is due to thirst. Calomel in small doses, $\frac{1}{12}$ or $\frac{1}{20}$ of a grain every hour, seems to act very beneficially in cases of severe and protracted vomiting. Cessation of vomiting is generally a favorable omen, unless the vital powers are very low, when it may be the precursor of death. When a child is at the breast, and the supply of milk is abundant and good, the prognosis seems to be more favorable than if the child has been weaned. The outlook, on the contrary, seems to be more discouraging if the child is born in winter or spring, so that the cutting of the more troublesome teeth and weaning come together in the same summer. A rapid fall of temperature of from fifteen to twenty degrees Fahrenheit, and particularly electric disturbances in the air, were often observed to cause an outbreak of acute diarrhœa.

Acute enterocolitis often follows an attack of simple diarrhœa in hand-fed children three to four years old. The stools change and contain traces of blood and mucus. The abdomen becomes distended and tender along the line of the colon; vomiting, though not a characteristic symptom, may be present at the onset. The diarrhœa may be gradually checked and convalescence is established in two to three weeks, or the disease becomes subacute, the fever subsides, but not so the diarrhœa. Irrigations with tepid water act with great benefit in these cases when combined with an absolute milk diet.

HISTORY OF EIGHT TYPICAL CASES.

No. 448.—G. C., a male, four months old, hand-fed. The mother of the child only spoke Russian, so that a complete history could not be obtained.

When admitted the child was in a state of collapse. The stools were small, white, and odorless, and would soak through the napkin without leaving a stain; there were frequent and severe convulsions. The face was ashy pale and cadaverous looking; the body was greatly emaciated, and the skin hung in loose folds. The eyes were sunken, glassy, and covered with a film. The breathing was irregular; the pulse imperceptible at the wrist; the abdomen hard and hot, while the extremities were cold. The child was unable to swallow, and seemed to be unconscious. The temperature taken in the rectum was 105.6° F.

4.00 P.M.	Rectal temperature, 105.6° F.; irrigation with ice-water.
4.45 P.M.	Rectal temperature, 101.6° F.
9.00 P.M.	Rectal temperature, 105.4° F.; irrigation with ice-water.
8.00 A.M.	Rectal temperature, 104° F.; irrigation with ice-water.
8.45 A.M.	Rectal temperature, 101° F.; irrigation with ice-water.
1.00 P.M.	Rectal temperature, 104° F.; irrigation with ice-water.
1.45 P.M.	Rectal temperature, 106.6° F; irrigation with ice-water.
8.00 P.M.	Rectal temperature, 103.4° F.; irrigation with ice-water.

Although the reduction of temperature after each irrigation was quite considerable, the temperature never sank much below 101° F., and rose almost immediately to near its former level. During the first twenty-four hours after admission the violence of the convulsions increased and the condition of the patient gradually grew worse. Although hot-water bags and hot bottles were continuously applied to the extremities and two hypodermic injections of atropine sulphate, grain $\frac{1}{200}$, were given at an interval of thirty minutes, the action of the heart could not be improved. The temperature was not controlled for any length of time, and the child, which had shown great vitality, succumbed on the third day after admission.

The patient was one of the first grave cases admitted to the hospital, and I think the prognosis might have been more favorable had irrigation been practised at shorter intervals than it was.

No. 436.—L. F., a female, hand-fed infant, eighteen months old, presented symptoms of severe choleroid diarrhœa, with convulsions. The temperature taken in the rectum was 104.8° F.

10.00 A.M.	Rectal temperature, 104.8° F.; irrigation with ice-water.
10.45 A.M.	Rectal temperature, 102.2° F.
3.00 P.M.	Rectal temperature, 103.8° F.; irrigation with ice-water.
4.00 P.M.	Rectal temperature, 100.2° F.
9.00 P.M.	Rectal temperature, 100.4° F.
10.00 A.M.	Rectal temperature, 101.6° F.; irrigation with ice-water.
8.00 P.M.	Rectal temperature, 99.6° F.

The convulsions ceased after the first irrigation.

No. 451.—R. L., a female, eleven months old, breast-fed, presented the characteristic symptoms of choleroid diarrhœa, associated

with simple stomatitis. The temperature taken in the rectum was 106.8° F.

10.00 A.M. Rectal temperature, 106.8° F.; irrigation with ice-water.
10.45 A.M. Rectal temperature, 104° F.
1.00 P.M. Rectal temperature, 105° F.; irrigation with ice-water.
1.45 P.M. Rectal temperature, 102.2° F.
4.00 P.M. Rectal temperature, 104.6° F.; irrigation with ice-water.
4.35 P.M. Rectal temperature, 99.8° F.

After the third irrigation the child presented marked symptoms of shock. The temperature taken in the rectum fell to 99.8° F.; in the axilla it was 98.6° F. The extremities grew cold. A hot pack was at once applied. At 9 P.M. the temperature taken in the rectum was 100.2° F. The child made an uninterrupted recovery; the stools assumed a normal appearance on the third day after admission.

No. 576.—F. D., a female, hand-fed infant, seventeen months old, presented the characteristic symptoms of choleroid diarrhœa, with rice-water stools, convulsions, and a temperature in the rectum of 104° F.

11.00 A.M. Rectal temperature, 104° F.; irrigation with ice-water.
11.40 A.M. Rectal temperature, 101.8° F.
12.30 P.M. Rectal temperature, 104° F.; irrigation with ice-water.
1.30 P.M. Rectal temperature, 101.2° F.
2.00 P.M. Rectal temperature, 103.6° F.
2.30 P.M. Rectal temperature, 101.2° F.
6.00 P.M. Rectal temperature, 103.4° F.; irrigation with ice-water.
6.30 P.M. Rectal temperature, 99.8° F.
11.00 P.M. Rectal temperature, 100.2° F.
9.00 A.M. Rectal temperature, 99.6° F.

In this case the irrigation was repeated every hour and a half or two hours, as the temperature rose almost immediately to its original level after each irrigation. The fourth irrigation was followed by a deeper and more lasting remission, with a cessation of the convulsions.

No. 461.—G. K., a hand-fed male, two years of age, had had measles when thirteen months old. On admission the child had rice-water stools every fifteen or twenty minutes, cried almost continually, and could not retain food on the stomach. The alarming symptoms had appeared four days previously, with progressively increasing violence. The temperature taken in the rectum was 104.4° F.

5.00 P.M. Rectal temperature, 104.4° F.; irrigation with ice-water.
5.45 P.M. Rectal temperature, 101° F.
6.30 P.M. Rectal temperature, 104° F.; irrigation with ice-water.
7.00 P.M. Rectal temperature, 101.8° F.
8.00 P.M. Rectal temperature, 104° F.; irrigation with ice-water.
8.45 P.M. Rectal temperature, 100.2° F.
10.00 P.M. Rectal temperature, 103.2° F.; irrigation with ice-water.
10.45 P.M. Rectal temperature, 99.4° F.

The stools soon diminished in number and became green and adherent to the napkin. The child vomited but twice after the second irrigation.

No. 479.—F. Sch., a female, hand-fed infant, aged five months, was brought suffering with a severe form of infectious diarrhœa, which developed soon after an attempt at weaning. There was diarrhœa and vomiting, followed by convulsions. The stools, semi-fluid and green, had a peculiar earthy smell. The buttocks were red and inflamed. The child cried almost incessantly and threw its head from side to side; the nostrils were dilated with each expiration. The pulse was frequent and feeble; the extremities were cold; the hands were rigid and the fingers firmly flexed; the pupils were contracted and the secretions of the eyes were deficient. The tongue and lips were red and dry. The temperature taken in the rectum was was 104.6° F.

11.00 A.M. Rectal temperature, 104.6° F.; irrigation with ice-water.
12.00 M. Rectal temperature, 101.6° F.
3.00 P.M. Rectal temperature, 103.4° F.; irrigation with ice-water.
3.45 P.M. Rectal temperature not taken, as child was asleep.
6.00 P.M. Rectal temperature, 103° F.; irrigation with ice-water.
9.00 A.M. Rectal temperature, 99.6° F.

There was marked improvement after the third irrigation. The convulsions and the vomiting ceased and stimulants were taken with great avidity. Saline irrigations were continued morning and night during the next three days, the temperature never rising above normal.

Five weeks later the patient was again admitted to the hospital suffering from a second attack of severe infectious diarrhœa. The child was in collapse and died two hours after admission.

No. 534.—A. J., a hand-fed female, six months old, was admitted with severe infectious diarrhœa. Symptoms of collapse were marked. Diarrhœa had suddenly set in four days previously and was soon followed by vomiting. There was total suppression of urine since previous day. The temperature taken in the rectum was 105.2° F. An irrigation with

ice-water was at once practised and hot applications were made to the cold extremities. The temperature taken in the rectum thirty minutes later showed a reduction of only 0.8° F. As stimulants could no longer be swallowed, hypodermic injections of atropine sulphate, grain $\frac{1}{200}$, were given twice, at an interval of thirty minutes, without improvement. The child died two hours after admission.

No. 533.—E. H., a breast-fed male, three months old, presented the usual symptoms of a case of severe infectious diarrhœa, accompanied by contraction of the tendons and convulsions.

6.00 P.M.	Rectal temperature, 104° F.; irrigation with ice-water.
6.45 P.M.	Rectal temperature, 102.8° F.
10.00 P.M.	Rectal temperature, 104° F.; irrigation with ice-water.
10.45 P.M.	Rectal temperature, 100.4° F.
8.00 A.M.	Rectal temperature, 102° F.; irrigation with ice-water.
8.45 A.M.	Rectal temperature, 99.6° F.

The fall of temperature after the first irrigation was comparatively slight and not as marked as that which took place after the second and third irrigations. The convulsive symptoms subsided after the second.

CONCLUSIONS.

My experiences lead to the following conclusions:

1. That intestinal irrigation may be considered a valuable adjunct in the methodical treatment of suitable cases of summer diarrhœa.

2. That irrigation with cold or ice-water will lower the temperature of the lower portion of the abdomen by direct refrigeration of the blood-mass, and that the procedure is indicated when high temperature, lasting for a considerable time, endangers life by coagulating the cerebral fluid or cardiac protoplasm, or when accumulation of fæces, mucus, etc., in the bowel causes a continued irritation of its mucous membrane.

3. *That the dangerous effects of the poisonous animal alkaloids are either diminished or counteracted or dissipated by irrigations.*

4. That the influence on the circulatory apparatus is shown by the change in the pulse, which becomes less frequent and stronger.

5. That systemic enteroclysis results in an amelioration of the symptoms and a shortening of the course of the affection, and will often overcome the semi-paralytic condition of different organs.

6. That the resistance which the fever offers to its reduction by this method is an index of the gravity or mildness of the case.

7. That alcoholic stimulants are of importance in the treatment of the summer diarrhœas of children.

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THE BEST METHODS TO BE RESORTED TO IN THE TREATMENT OF SOME COMMON DISEASES.

BEING THE ANNUAL ADDRESS BEFORE THE LEHIGH VALLEY MEDICAL ASSOCIATION AT THE MEETING HELD AT HAZLETON ON AUGUST 3, 1893.

BY H. A. HARE, M.D.,
Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia.

ONE of two duties devolve upon a member of the profession who accepts the courteous invitation of your Secretary to address the Lehigh Valley Medical Association. He may devote the time set aside for his address to a recital of original investigation in some branch of scientific medicine having a direct or indirect bearing upon practice, or he may employ the opportunity in discussing certain important points in relation to the practical every-day treatment of disease. The first of these is, if its accomplishment is possible, certainly the ideal which is desirable from the purely scientific point of view, but the second is after all the most interesting to the majority, and certainly productive of the greatest good to the active practitioner. This is due to the fact that it is often much better for a tradesman to take an account of stock than to fill his store with new goods, particularly when reasonable doubt exists as to whether the new will be as frequently sold as the old. His effort should be rather to introduce old and well-tried materials into new lines of value, and to interest himself further than this in only a few of the more prominent candidates for permanent usefulness. Recognizing these facts, I have ventured to speak to-day of several topics, not because they are new or unknown, but rather for the purpose of making an estimate as to their value. In making this estimation I have utilized not only current medical literature, but have controlled it by personal investigation in the large hospital service which I have under my care during part of each year. This hospital service is perhaps more valuable in determining the usefulness of various therapeutic measures and diagnostic points than would be a similar number of observations in private practice, since the influences of environment, diet, nursing, and general control are all equal in each case, and the effect of remedial procedures can be studied without complicating accidents or possibilities of irregularity in their employment.

The first of these points which attracts attention is the question as to the methods to be employed by the average practitioner in the treatment of effusions into the peritoneal cavity,—*i.e.*, ascites. One of the recent articles on this topic is that of Cheadle, of London, one of the best-posted clinicians of that medical centre. In this he calls attention to the very diverse views expressed by the profession as to the proper measures to be pursued when such a case presents itself for treatment. Thus, Roberts is practically the only author of a book on the "Practice of Medicine" that Cheadle could find who urges resort to paracentesis or tapping, all the others recommending purgatives, diuretics, counter-irritants, diaphoretics, and other equally feeble methods, and considering *paracentesis abdominis* only as a last resort. Against such views Cheadle very properly protests, and believes that we are simply blindly following precedent instead of acting for ourselves when we accept such advice as correct. In my comparatively limited experience I thought I had learned that paracentesis was practically the only satisfactory method to follow, and in consequence have tapped every case of well-marked ascites which has come under my care. For this reason the statement of Cheadle that most authors refrained from paracentesis till the last moment caused me to examine American authorities to discover if I had been too ready with the trocar and canula. Fortunately, the result of this examination has been to show that in this country paracentesis is more frequently performed, although even here it is still regarded as a measure to be resorted to late in the malady in most instances. On the other hand, several American authors have recognized the fact that early tapping for ascites is sometimes of great service. Thus, Osler states that in that form of ascites due to hepatic cirrhosis repeated early tapping may give time for a collateral circulation to be established and so a temporary cure effected. Similarly, Lyman says that tapping should not be regarded as a last resort, and no less an authority than Alonzo Clark asserts that it will become necessary in almost every case, and that the question is one as to its early or late employment. He believes that the disadvantages of waiting till the last moment are great, but takes the more moderate ground than Osler or Lyman, that if performed early there is danger of provoking peritonitis, and that this danger is in direct ratio to the earliness of its employment. Bristowe is far more conservative, and states that the operation is often needed, but is generally postponed as long as possible,

and deservedly so. Flint, while recognizing these teachings, believes that they are erroneous, and that tapping early is of benefit in many ways in the avoidance of distention and secondary changes therefrom, not to mention discomfort to the patient. He particularly emphasizes the fact that tapping frequently produces an apparent cure.

The reason that Cheadle's statements as to the value of tapping, so far as the quotations from standard authors are concerned, seem opposed to our common practice of to-day becomes clear, however, as soon as we examine his authorities. It then at once becomes apparent that the treatment of ascites has changed very much, as will be seen by the following quotations from various authors.

Sir Thomas Watson spoke of it as a final resort, with the faint hope of giving temporary relief. Frerichs opposed it on the ground that pressure on the vena portæ lessens the rapidity of effusion. Niemeyer says the abdomen should only be tapped when life is immediately endangered. Thierfelder says, "This operation must not be undertaken unnecessarily, but only in response to an urgent indication, as great dyspnœa, obstinate vomiting," and speaks of it only as treatment for relief of symptoms. "Tapping," he says, "invariably affords merely transitory amelioration." Murchison long approved the rule that the operation should be delayed as late as possible,—that is, until respiration is seriously affected,—on the ground of the loss of albumin involved. Aitken refers to tapping as "the last imperfect resource of our art." In the latest edition, just published, of one of the leading books on "The Principles and Practice of Medicine" (Fagge and Pye-Smith), the direction is, "It should not be performed until the distress caused by the distention of the abdomen becomes insupportable" (vol. ii. p. 300).

Another: "Paracentesis should be put off as long as possible, for the end of the disease often arrives soon after tapping, although in some cases ascites is cured by the operation" (Wickham Legge, in "Quain's Dictionary").

The old school taught abstinence from tapping, the later school is teaching to tap frequently, and the latest school is teaching to tap early. Among the strong advocates for tapping may be found Roberts, Duncan, McCrew and Habershon, and Cheadle. Not the least of those who have urged it in America was the late R. L. MacDonnell, of Montreal, who earnestly believed that in ascites due to cirrhosis tapping exercised a distinct curative influence not only in preventing a reaccumulation of the fluid, but in arresting the cirrhotic process in the liver in those cases in which this lesion underlaid the effusion. Thus, he reported in the *Medical News* in October, 1889, a case of a butcher who had been tapped repeatedly, sometimes as frequently as every two days, and from whom no less than six thousand four hundred ounces of fluid were withdrawn in about four months for ascites due to alcoholic cirrhosis. The fluid gradually failed to reaccumulate, and, to the surprise of MacDonnell, the patient practically recovered in the course of a year or so to such an extent as to be able to attend to his business and be a hearty man. In the same article MacDonnell quoted another earlier case, in which, after sixteen months and sixty tappings, which removed nine thousand ounces of fluid, a case of alcoholic cirrhosis was completely restored to health. Other cases might be cited, but these are sufficient to show that in young subjects, at least, who have good blood-vessels, the removal of pressure permits of that vitally-essential process in all forms of abdominal effusion, more particularly that due to cirrhosis,—namely, the formation of a collateral circulation. The consequences of ascitic pressure are so grave that it is surely our duty to relieve it in every case, and the sooner this is accomplished the more chance is there for the maintainance of a moderately normal condition of the abdominal contents.

Cheadle has so well emphasized these dangers that his remarks are worth quoting. He says, "The diaphragm is pushed upward, so that abdominal respiration almost ceases; the lungs are imperfectly inflated; congestion, collapse, and basal bronchitis ensue. The heart is embarrassed by the upward pressure, increasing still more the impediment to the circulation already existing in the systemic and pulmonary vessels. The movements of the stomach are hampered, and the circulation in that organ, already impeded by the portal block, is made still more difficult. In the same way the spleen, the pancreas, the intestines, all suffer, while the liver itself is injuriously affected, the pressure of fluid obstructing the portal vein; and, most important of all, preventing the dilatation of the vênæ communicantes, the new channel upon which the relief of the obstruction so vitally depends.

"The kidneys do not discharge into the portal system, but into the vena cava, and therefore are not directly affected by the venous block. Their congestion in the late stage of ascites affords striking evidence of the disastrous effects of a simple mechanical external pressure of fluid. When this becomes pronounced, the urine be-

comes scanty, high-colored, albuminous. There ensues, in fact, a passive nephritis, a lessened excretion of urea, and a slight uræmia, adding systemic poisoning to the other disorders."

Aside from the good results already quoted, are there any advantages to be gained in those instances in which paracentesis is not so potent for good and in which it can only alleviate the state of the patient? Compared to the treatment by drugs, such as purgatives, diuretics, and similar measures, it is certainly infinitely preferable. Those of us who have used these methods have generally seen our patients lose in flesh and strength faster than they got rid of the effusion, and in addition suffer the mental annoyance and personal inconvenience of a prolonged disagreeable, digestion-disturbing, and perhaps ineffectual attempt. Practically, there is no danger whatever in aspiration if it is done carefully with a fine needle, under antiseptic precautions, and with care not to empty the peritoneum at one sitting. Any cases of peritonitis which may have ensued in the past were probably due to sepsis or traumatism. The pain of a tapping with a fine needle, even when no local anæsthesia is produced, is nothing as compared to the gripes of purgatives or indigestion.

Another question of very great interest to the medical practitioner is that of the proper treatment of diabetes, aside from the matter of diet. In the address in medicine which I delivered at the last meeting of the American Medical Association it was pointed out that this condition is in reality only a symptom, and not a disease, and that it is dependent upon nervous, hepatic, and pancreatic disturbances or disease. It is not necessary to discuss some of the recent views of the pathology of this affection, since the object is but to call attention to the well-grounded value of the derivatives of opium in certain forms of diabetes, the reason of which we are unable to determine until the pathologist discovers their origin, but it will probably be found to be those cases of diabetes dependent upon hepatic disorder which are benefited by these drugs. Some time ago Mitchell Bruce carried out the most elaborate and careful clinical research that is extant upon this topic, in order to determine whether morphine or codeine was the most useful alkaloid in diabetes. To be sure he only had two individuals on which to make his studies, but the thoroughness of his methods eliminated every error except that of personal idiosyncrasy, which, unfortunately, still remains. His research is worthy of note not only because of its results, but by reason of its thoroughness.

In the first place, the patients were put upon a rigid antidiabetic diet, without any medicine except a little camphor-water, until the elimination of sugar reached the lowest constant point. When this point was reached the diet was still continued, without drugs, for several additional days to be sure that the quantity of sugar was constant without doubt, and then codeine was given at first in small doses, which were gradually increased until the full amount possible to give was reached. During all this time careful estimations of sugar and urea were made and the quantity of urine measured. After the effect of maximum doses of codeine had been decided upon, the doses were gradually decreased, and finally stopped entirely. The codeine made a marked decrease in the quantity of the urine and sugar, and the greatest decrease was noted in both the patients on the fiftieth day of treatment, when the doses of codeine amounted to the large amounts of 27 and 22 grains respectively per diem. There was practically never a total disappearance of sugar even then, but there was a very great gain in body-weight in each instance. In neither case did the codeine cause much nervous mental disorder. Far more interesting were the results reached from the use of morphine acetate, for the effect produced was much more rapid and powerful. The quantity of the urine was decreased nearly fifty per cent. and the specific gravity quite fifty per cent. Fortunately, too, there was no drowsiness or heaviness from the morphine, but, on the other hand, an increased mental activity. The particularly interesting points for us to remember as practical physicians are that morphine exercised far more control than codeine, although given in one-fourth the dose, only 6 grains of morphine acetate being used each day. Finally, we are impressed with four important facts: first, that large doses of both these alkaloids are needed for the control of diabetes; second, that the condition of diabetes enables the patient to rapidly grow accustomed to these drugs; third, that they rarely cause excessive mental symptoms; and, fourth, that the morphine should be used by the mouth every three or four hours, and ought not to be given hypodermically. If given hypodermically it affects the entire system equally, but if placed in the stomach it passes directly through the portal system into the liver, where it acts at once and in comparatively concentrated form on the glycogenic function of this organ. Further than this, its full action on the liver prevents it from exercising great power over the nervous system, since it is in the liver that the drug is chiefly oxidized or destroyed. Perhaps it is worth while to note one more point in relation to this

subject,—namely, that while morphine and codeine produce great improvement in many cases of diabetes mellitus, they seldom succeed in removing the last traces of sugar.

Another use of morphine not generally spoken of in the text-books or taught to medical students by lecturers is its employment for the relief of certain cases of cardiac disease, and the subject is brought to your attention rather for the purpose of eliciting an expression of opinion from those who are kind enough to listen to the address than to express one on my own responsibility. Those who have used morphine most under these circumstances assert that its influence is felt to the greatest advantage when the mitral valves are diseased, yet it certainly acts very well in aortic lesions. In one case, a man of forty-nine years, who was suffering from aortic disease of the most marked type, with dyspnœa and exhaustion, the severity of which was absolutely terrifying, the hypodermic injection of a quarter of a grain permitted sleep and temporarily saved life on several successive nights. In this case there was well-marked dropsy of the lower extremities sufficient to necessitate acupuncture for his relief, and there was also well-marked evidence of pulmonary œdema, which had to be relieved from time to time by cupping. The relief of the gasping respiration, of the wild desire for air, the dropping of the head from exhausting loss of sleep, to be followed by wild efforts to get the breath,—the relief of these distressing symptoms in this and other cases has done much towards increasing my confidence in morphine at such times. On the other hand, I have seen results follow its use by no means so desirable and in cases in which beforehand it seemed impossible to discover any particular sign to contraindicate its use. Not only is this true, but in one case of mitral regurgitation use of the drug was rapidly followed by death. The patient soon fell asleep, as quietly as a child, sitting in an easy-chair, and was found dead when the attendant awoke after several hours of sleep following prolonged nursing. It is only fair to say that the man's condition was so serious that death would perhaps have come as early without the drug and with far more suffering. Perhaps in the discussion which I hope will follow my paper some one may give his views as to the points which should govern the use of morphine at such times. That it does great good at certain times in heart-disease is certain. Its use in this way is rational, for the drug has been proved, both experimentally and clinically, to be an active heart-stimulant.

In the treatment of the kidney and bladder we are often sadly at a loss to know what remedies to use, for our therapeutic armamentarium is certainly deficient in this direction. At the risk of speaking once more of a subject which is well known to you all, I wish to mention cantharides. It is so old a remedy for genito-urinary conditions that its mention seems almost ridiculous, yet its *internal* employment is so unusual, comparatively speaking, that it may be said to have dropped out of use undeservedly. Its influence upon diuresis was first impressed upon me several years ago when using it externally in the form of cantharidal collodion for the relief of renal congestion. Its application resulted in such an increase in urinary flow that it was difficult to believe that the mere counter-irritation could have produced such free diuresis; and remembering that of all the methods of applying cantharides externally this one usually resulted in the greatest absorption, I at once followed the indication given me and the advice offered by some writers, and gave tincture of cantharides internally. For several years I have resorted to this method in numerous cases with the greatest satisfaction, and regard it as one of the most reliable remedial measures we have within certain distinct limitations, which are some of them as follows:

First, it will be found in many cases of kidney-trouble following acute inflammation that the kidney has practically recovered from its disease, but is in a condition of atony and inactivity because of the reaction which has followed its period of temporary excitement. The urine may be passed either in excessive quantity or in too small amounts, and in other instances may contain albumin without casts. Here the administration of from one to three drops of the tincture of cantharides three times a day, well diluted with water, will frequently regulate the urinary flow and the albumin will disappear. Similarly, in cases of parenchymatous nephritis, where the kidney is large, baggy, and relaxed, a most extraordinary increase in urinary flow may be produced by this drug. I have recently had under my care, in the wards of the Jefferson Hospital, a man from the interior portion of the State of Pennsylvania, who, on admittance, was passing at the most sixteen ounces of urine a day. At the end of ten days the urinary flow, under the administration of cantharides, one to three drops three times a day, had increased to no less than five pints in the twenty-four hours. There had been a very great decrease in the dropsical swelling in the lower extremities, his face had regained its normal size, and the puffiness under the eyes had entirely disappeared. After this treatment had

been continued for about three weeks, a newer drug, "diuretin," was substituted for the sake of the experiment, although my previous experience with this newer remedy had been such as to discourage me in its use. Within forty-eight hours after the cantharides was stopped the quantity of urine decreased to thirty-nine ounces, and remained at that point until, four or five days later, the cantharides was renewed, when it at once rose to five pints, the point at which it now remains.

If, in these cases of chronic renal trouble, the dropsical swelling tends to produce alterations in the nutrition of the skin of such a character that a more or less severe eczema rubrum affects the lower extremities, particularly over the tibia, cantharides proves particularly useful, for, as is well known to dermatologists, this drug, when administered internally, may exercise a very favorable influence upon the skin. In this particular instance it does good not only by increasing renal activity, but by stimulating the skin to improved nutrition.

Cantharides has also proved a useful drug in my hands in the treatment of incontinence of urine dependent upon lack of control of the vesical sphincter, as, for example, in those cases where either laughter or sudden jarring of the body permits of the escape of a few drops of urine, or in the more distressing cases of phthisis, where with each violent attack of coughing a similar incontinence ensues. A drop of cantharides every eight hours or every six hours in the twenty-four in many of these cases is enough to give relief, and such relief will always be accompanied by the heart-felt thanks of the patient. Although I have used it now in a large number of cases, I have failed to find in one of these cases that this dose produced irritability of the stomach or of the bladder. It is hardly necessary for me to add that the drug should not be given should the stomach, bladder, or kidneys already be in a condition of inflammation. It is also hardly necessary for me to speak to you of the more frequent employment of cantharides for the relief of sexual impotence. We are so apt at the present time to rely upon phosphorus, nux vomica, and damiana for this purpose that we are apt to neglect this remedy. Within the last few months I have resorted to its employment in the cases where these more popular remedies have failed, with remarkable results,—sufficiently favorable, at least, to make me remember it and try it in all future cases of this kind which may come to my hands.

A remedy which by comparison is as new as cantharides is old, is ichthyol, yet its great value in a very wide range of cases is so well recognized that it is largely used. Its use has been to a great extent practically empirical, since even now we scarcely know more of it than that it acts differently from all compounds containing sulphur; but I am hopeful that a research begun at my suggestion by Dr. Kyle, of the Jefferson Medical College, may place its use on a more rational basis. So far it seems probable that the wonderful power of ichthyol in dispersing indurations and swellings depends upon its power of dissolving the intercellular cement-substance and so setting free newly-formed cells, so that they are readily dispersed.

Whatever the explanation of its action may be, it will certainly give good results both when applied to acute and chronic inflammatory processes. An ichthyol dressing of twenty-five per cent. ichthyol and seventy-five per cent. lanoline, in cases of erysipelas, is the best application by long odds with which I am acquainted, and in acute articular rheumatism forms the most efficient application for the relief of the heat, swelling, redness, and pain. In this disease as strong an ointment as fifty per cent. is often better than one of twenty-five per cent. After it is applied the affected part should be wrapped in patent lint heavily smeared with the same mixture. From its use in a large number of cases of acute rheumatism I have learned to regard it as a remedy almost as valuable as the salicylates. For the purpose of relieving indurated glands, as after bubo or cervical adenitis, or the limbering up of the sheaths of muscles stiffened by strain, cold, or rheumatic tendency, ichthyol has certainly a most important place. Similarly, I have frequently seen ichthyol remove obstinate skin-affections either when they were dry, superficial, and scaly, or when, through chronic eczema, marked subdermal induration arrested the healing process. Of the internal use of ichthyol I can speak but little. Although Continental writers claim good results from its employment internally, the few cases to which I have given it have not seemed much benefited.

The local anæsthetic power of iodoform is very frequently overlooked, particularly since cocaine has become so favorite a drug; yet in many respects iodoform is far superior to this vegetable alkaloid in certain conditions. In diseased conditions of the rectal mucous membrane, where cocaine cannot be used successfully because of the resistance of this membrane to its penetration, iodoform acts as a valuable substitute. Not only will it often give relief in cases of fissure of the anus, and permit a painless movement of the bowels, but

it will simultaneously permit the employment of a curative application. Very frequently the pain in the rectum after operation for lacerated cervix uteri and perineum will be for some days absolutely insupportable, particularly if the laceration has existed for some years, so that the parts have become somewhat relaxed. All forms of rectal pain are badly borne, and this form often demands the use of an opium suppository, which, in turn, in susceptible persons soon produces nausea, depression, and even vomiting. In cases where there is reason to believe that opium will act in this manner, an iodoform suppository of 5 grains, repeated two or three times a day, will relieve the discomfort without developing systemic symptoms. The method of treatment will often relieve the weight and fulness of the rectum due to the presence of excoriated or irritable hemorrhoids. In addition to the local anæsthetic effect, we also obtain the alterative and antiseptic influence of the drug.

Finally, I shall close this paper by calling your attention to two points which are not as clearly understood as they should be, chiefly because they are not carefully thought out. Several years ago a series of clinical and experimental studies by Dr. Martin and myself made me feel sure that certain teachings universally received and adopted as correct were erroneous. I refer, first, to the methods usually followed in the resuscitation of persons who have ceased breathing while under the influence of an anæsthetic, and, second, to the methods used when large enemata are being employed for the purpose of washing out or overcoming obstruction of the rectum or colon. A year ago, in Cincinnati, in the address in medicine before the Mississippi Valley Medical Association, I spoke of this subject, and in view of its importance trust you will pardon my doing so a second time.

It is now many years since the custom of stimulating the phrenic nerves was introduced in cases of anæsthesia which had stopped breathing, with the idea that in this way the surgeon would cause the chief muscle of respiration, the diaphragm, to contract, and so restore this function. At first glance such a procedure savors of usefulness, but a second thought at once discloses the illogical basis on which such a method must rest. In the first place it is not the peripheral or functionating respiratory apparatus which is at fault at such times, but the central apparatus, and, therefore, the stimulation of the nerve by the electricity can only bring about a single contraction, which, unless followed by normal ones, would be useless. Secondly, even this value does not exist in reality, because it is practically impossible to stimulate the phrenic, owing to its situation in the neck, unless we employ a very strong current, one sufficiently strong to diffuse itself through the tissues and irritate to a greater degree the vagus. Further than this, there is yet another fallacy in this treatment, because the surgeon always, at least in my experience, applies the current from a faradic battery, and uses the rapidly-interrupted or irritating current. If, as is taught, this really does influence the phrenic nerve, then this rapidly-interrupted current will cause a tetanic spasm of the diaphragm, just as it will tetanize other muscles. If any current is to be used for stimulating the phrenic nerve so as to produce diaphragmatic contraction, it should be the slowly-interrupted current, so slowly interrupted as to send shocks in time with normal respiration. Not only is the use of the rapidly-interrupted current therefore useless, but it is harmful, because it irritates, as I have said, the vagus nerve at a time when that nerve is either too active because of shock, or the heart is engorged with blood, either from direct depression of its walls or by reason of pulmonary obstruction. The effect of irritation of the vagus, both physiologically and pathologically, is to slow or stop the heart and hold the ventricles in wide diastole or dilatation, and if we succeed in stimulating the phrenic we will, as I have said, stimulate the vagus and seriously impair the integrity of the cardiac function. It is, of course, true that it is practically impossible to arrest the heart long enough to cause death through electrical stimulation of the vagus; but in cases of cardiac failure, the addition of this vagal inhibition to the true failure already manifest may be the last straw to break the heart's back.

The diagram which I show here is a correct representation of a tracing taken from the carotid artery of a dog, and shows the temporary cardiac inhibition when the current is turned on. Before I have reached this point in my paper there are doubtless a number of the hearers who recalled cases in which this time-honored custom seemed to render good service in their hands. I have no doubt that it has done so, but I am sure, if it has, the result has been obtained indirectly and not directly,—namely, by the reflex activity started up through the application of the electricity to the skin of the neck. This same effect is sought after in the slapping with wet towels or the use of the alternate dash of hot and cold water, and in the cases where the application of an electrode to the phrenic region might as well be supplanted by its application to some other important area of sensory nerve-

fibres, and not where, in attempting to produce a useless phrenic stimulation, we develop a harmful vagal irritation.

The second subject, that of injections into the bowel, is equally interesting. Very important points to be decided in connection with this subject are the amount of pressure which can be used, the length of time during which the injection should be continued, and, finally, the temperature of the fluid injected.

Although it may strike you as being self-evident, a moment's recollection will show you that rectal injections are generally performed not only with force, but with rapidity; but this is wrong, as clinical experience and my experiments have proved. By the use of a fountain-syringe attached to a mercurial manometer the number of pounds' pressure that it is permissible to use was easily estimated. It has been claimed that certain pressures will cause rupture of the peritoneal coat of the intestines, but we failed in the dog to produce this lesion by any pressure we could employ, since before this occurred the liquid passed through the stomach and mouth.

To employ a pressure exceeding eight pounds is, however, distinctly dangerous, not because the intestinal wall in health will not stand this, as a rule, but because it is near the injury line, and if any disease or softening of the bowel exist, it is almost certain to cause rupture. A pressure of from two to five pounds is, as a rule, as much as may be employed, and this pressure should be obtained by degrees, starting the injection at such a point of pressure that it amounts to hardly more than a trickle, and increasing the pressure as the antagonism of the bowel is overcome. Finally, when the bowel is fully distended up to the point of obstruction, the pressure on the no longer moving column of water may be increased, if necessary, to six or eight pounds by raising the bag of water. In infants, in whom invagination so often occurs, a pressure greater than two pounds is dangerous, and it is of vital importance that the pressure be employed properly, otherwise it will do more harm than good in several ways. As a rule, in our anxiety to give the patient relief at once, we are inclined to use too much force and too large a bulk of water, and think that active force, if I may use such a term, is to be resorted to. Those of you who have seen these cases have learned by experience the harmfulness of such measures, and have also learned how great is the expulsive power of the bowel when it is excited to contraction. If this power be brought into activity, it will be almost impossible to inject fluid into the rectum, and, worse than all, the muscular fibres of the intussuscipiens take a still tighter grasp of the intussusceptum.

In order to determine the exact amount of pressure permissible in such cases, Dr. Martin and myself carried out a series of experiments, and found from the very first that the force exercised is a comparatively unimportant factor compared with speed,—that is to say, an injection of two quarts of water, made very slowly, was less apt to cause intestinal opposition than one pint rapidly sent into the gut. This is, perhaps, the most important point to be remembered in our treatment. At the risk of saying that which is trite, let me call your attention to the dangerous practice of using a Davidson or any other kind of artificial force syringe in the treatment of this class of cases. We know of three unreported cases of rupture of the bowel and death from the employment of the Davidson syringe for this purpose, because the amount of force used was indeterminable, and because it was injected by a jerking instead of a constant flow. In the "Medico-Chirurgical Transactions," fifty-ninth volume, there are many of these accidents recorded. The amount of fluid injected should be large, and if it is impossible to get a large amount into the bowel, it is probably because the inflow has been so rapid as to excite intestinal opposition. If, by a slow trickle of water into the bowel, gradually increasing the pressure, we are unable to give relief in forty-five minutes, it is necessary either to give this treatment up as useless or else allow the liquid to flow away, and resort to the measure again in some hours. Practical experience has shown that the second or third injections sometimes succeed, probably because they are more skilfully given and the first has prepared the way for the others, but it is to be remembered that the chances are best with the first injection, if it is properly given. Frequently-repeated small injections are absolutely unjustifiable.

Finally, I cannot leave this subject without saying a word concerning the temperature of the injected liquid and its constitution. An injection of this kind goes into the very heat-citadels of the body, and if too cold, as it often is, produces dangerous chilling of organs which are ordinarily specially protected from cold by the omental apron and intestines. By repeated experiment we found that water at 65° F. lowered the bodily heat three degrees in thirty minutes. The use of colder water than this (52° F.) resulted in death in twelve hours, and the post-mortem showed intense congestion of the colon, which contained bloody mucus.

The use of water of too high a temperature

is also dangerous, lest it produce heat-stroke. Of course, no one would use water hot enough to produce local harm, yet it is necessary to have just enough heat and no more. In our first experiment we proved that the use of water at 115° F. caused in twenty-five minutes a rise of bodily temperature in the axilla of nearly five degrees, and developed marked symptoms of heat dyspnœa. The temperature which it is right to employ we found to be 101° to 103° F. as it entered the bowel, or even as high as 104° F. in the water-bag, if a long tube was used, as under these circumstances the water is rapidly cooled. An interesting result of these experiments as to heat is that, when cold water was used, it took four times as long to make the injection as when moderately warm water was employed.

If very large injections are used, a normal saline solution of 7 per 1000 should be employed to avoid the abstraction of vital salts from the intestinal wall, with consequent passage of water into the tissues, making them boggy, according to the law of osmosis.

In regard to the effect of distention of the bowel by injection on the circulation and respiration, we found practically none, but the passage of large amounts of warmed fluid into the abdominal cavity causes death rapidly.

As I said to you in the beginning of my paper, I fear that much of what I have said to you will not have appeared new, and if this is the case, I can only excuse myself by the reiteration of the fact that advantages are sometimes gained by giving up the hunt for new drugs in order that we may take account of stock of older remedies, which in our hurry to obtain new ones have been unjustly ignored.

THE ACTION OF OLEIC CREOSOTE.

Oleocreosote is an oleic ether of creosote. It is obtained by the interaction of oleic acid and creosote, through the influence of dehydrating substances, such as the trichloride of phosphorus, the oxychloride of phosphorus, and others.

From an elaborate pharmacological study of this new substance, J. L. PREVOST (*Revue Médicale de la Suisse Romande*, February 20, 1893) has drawn the following conclusions:

1. Creosote in oleic combination (*oleocreosote*) is tolerated in larger doses than when it is simply mixed with oil, and does not cause gastro-intestinal disturbances.

2. The toxicity of oleocreosote is much less pronounced than that of creosote simply dissolved in oil.

3. Experiments show that hypodermic injections of oleocreosote are followed by elimination of the drug through the urine. This elimination occurs at a later period and lasts longer than when injections of a simple mixture of oil and creosote are made.

4. Administered by the stomach, oleocreosote is evidently absorbed, and gives origin to an elimination of phenol, but to a considerably less extent than when the new drug is given in simple oily solution. The results of the experiments show that oleocreosote is much less toxic than the simple oily mixture; that it is absorbed from both the intestinal tract and the cellular tissue, and is eliminated by the urine in the form of phenols.

These researches, however, only show the behavior of the oleocreosote from pharmacological and toxicological points of view; but no deductions can yet be made in regard to the therapeutic value of the new substance when compared to the simple oily solution. To form an opinion in this respect clinical observations are wanting.

THE HYPODERMIC INJECTIONS OF SERUM IN THE TREATMENT OF PNEUMONIA.

In an elaborate article, H. AUDEOUD (*Revue Médicale de la Suisse Romande*, February 20, 1893) details three interesting cases of pneumonia treated by the subcutaneous injections of serum. The results were satisfactory, and it is shown by temperature charts that the injections produced the expected crises, these being followed by a decline of the febrile temperature and an amelioration of the rest of the symptoms. The injections were generally of 2 cubic centimetres each, the blood being taken from convalescing pneumonic patients. The ages of the three patients observed, all males, were fifty-six, fifty-two, and thirty-nine respectively. The author preferred the subcutaneous to the intravenous method, owing to the possibility of causing emboli by the latter one. He believes that the serum of the blood of patients convalescing from a frank pneumonia must contain the antipneumotoxine. No definite conclusions, however, are arrived at by the author, but he remarks that his results so far corroborate those previously obtained by Klemperer, Foa, and Janson. Reference is made to the observation published by Hughes and Carter in the GAZETTE of October 15, 1892.

The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS.
With special departments under the charge of
G. E. DE SCHWEINITZ, M.D.,
OPHTHALMIC AND AURAL THERAPEUTICS,
AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

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Leading Articles.

ADDITIONAL MEASURES TO ENTEROCLYSIS IN THE TREATMENT OF THE SUMMER DIARRHŒA OF INFANTS.

IF there ever was a well-worn subject that has been discussed year after year in the original and editorial columns of almost every medical journal, surely the subject of the treatment of the summer diarrhœa of infants is one which is well worn, and yet one which never ceases to be of importance and interest to the general practitioner. This interest depends not only upon the fact that the condition is one which he constantly meets with in his general practice, and which demands his very best efforts for its control, but also because the progress of therapeutics has been so rapid in the direction of the treatment of this condition that each year adds to our knowledge of how to treat it successfully as well as to our information concerning its etiology.

Perhaps the most important prophylactic and therapeutic point which has been gained in the therapy of this condition has been the practical application of sterilized milk to the feeding of those infants who could not be fed at the breast; and, secondly, the introduction of that most valuable aid to proper alimentation of the sick,—namely, the peptonizing of foods. These two methods—namely, sterilization and peptonization—may be considered as the important primary department of the treatment of summer diarrhœa in children, or, for that matter, for the diarrhœa of adults. The methods which are employed for sterilization and peptonization are, fortunately, already so familiar to all the profession that it is not necessary at this time to reiterate them. If a case of cholera infantum falls into the hands of a practitioner who has not had much experience in the employment of these processes, he can find carefully-prepared directions accompanying the comparatively cheap and useful sterilizing apparatus which can be bought in various forms in almost every drug-store, while around the box containing the peptonizing tablets he will find carefully-printed directions as to the preparation of the nitrogenous food so as to render its assimilation more easy. Aside from these two therapeutic points, our therapeutics of this condition has certainly advanced rapidly so far as drugs are concerned, and this advance, like that just mentioned, has been a double one, consisting in a better idea of how to use those drugs which for years have been known to the medical profession, though perhaps seldom employed in this condition, and the introduction of the newer remedies which possess the power of producing, to some extent at least, intestinal antisepsis.

Three of the older remedies which are invaluable in the treatment of intestinal disorders of childhood are arsenic, corrosive sublimate, and podophyllin. While within the last year or two a number of absurd papers have been published lauding to the skies arsenical preparations which it was claimed would cure all cases of serous diarrhœa, and while this excessive laudation has resulted only in disappointment to those who were carried away with it, it nevertheless remains true that in children who have a constant tendency to laxity of the bowels, particularly during hot weather, minute doses of Fowler's solution, arsenous acid, or the arsenite of copper tend to correct this tendency. These drugs are valuable rather as prophylactics than as efficient remedies when the diarrhœa

has once thoroughly started. By minute doses we do not mean so small a quantity as $\frac{1}{1000}$ or $\frac{1}{5000}$ of a grain, but about $\frac{1}{100}$ to $\frac{1}{200}$ of a grain of arsenous acid, or the arsenite of copper, or $\frac{1}{4}$ to 1 drop of Fowler's solution, according to the age of the child. If there is any evidence of intestinal irritation and inflammation due to the presence of irritating foods, we believe that arsenic in all forms is contraindicated. It is rather in those cases where there seems to be a leakage of liquid into the bowel that its value becomes apparent.

Sometimes in these cases of summer diarrhœa in children the physician notices that a very large proportion of the movement is not serous, but mucous. It is hardly necessary to say that the first thing to be done under these circumstances is to give some drug which will sweep from the bowel not only offending food which is predisposing to intestinal irritation, but also any excess of mucus that may already have been formed by irritation of the mucous membrane. There are two drugs which fulfil this indication better than any others,—rhubarb, in the form of the spiced syrup, in the dose of one teaspoonful to a tablespoonful, according to the age of the child, or, in very young children, castor oil in the dose of a teaspoonful, or a dessertspoonful in children of three years or more. Both these drugs not only act upon the bowel without inflaming or irritating it, but in addition have a distinct constipating tendency after their primary influence has been exerted. The saline cathartics should never he used under these circumstances. The mucus having been thoroughly expelled from the bowel, or even before it has been removed by the purgative, and at the same time that the purgative is administered, it is well to give $\frac{1}{500}$ or $\frac{1}{200}$, or even $\frac{1}{100}$ of a grain of corrosive sublimate three times a day, or $\frac{1}{1000}$ of a grain every two or three hours, well diluted. In some way corrosive sublimate seems to exercise a peculiarly favorable influence where mucus is present, and while the dose given may seem so infinitesimal as to be useless, in reality it is not so, when we remember that a solution of 1 to 20,000 or 1 to 30,000 of this drug possesses distinct antiseptic properties.

The third drug—podophyllin—has its sphere of usefulness not so much in the mucous diarrhœa as in the serous form. In many of these cases as the diarrhœa progresses it will be noted that the stools are absolutely colorless, a slight deposit, looking like wet, powdered chalk, being found on the diaper, surrounded by an area of more or less moisture, and having a peculiar mousey odor; the ordinary coloring of fæcal matter is totally absent, and its absence denotes an entire absence of the biliary secretion and probably of the secretion of the intestinal glands. Under these circumstances there is but one substance which will stimulate these glands to proper secretion without at the same time weakening the patient as would calomel, and that substance is podophyllin, given in the dose of $\frac{1}{20}$ to $\frac{1}{10}$ of a grain every two hours, until the first signs of color come back to the movements. The physician need not fear that the podophyllin, if given well diluted with alcohol and water, will produce disagreeable symptoms or increase the diarrhœa. He should direct that the diapers be carefully preserved in the order in which they are used, and at each visit should examine them carefully. The first streak of color on the diaper indicates that the podophyllin is beginning to stimulate hepatic action, and should be regarded as favorable a sign as is the black, tarry stool of dysentery when large doses of ipecac are acting properly. As long as the perfectly-colorless passages continue the danger of the case is imminent; its chances for recovery are in direct ratio to the amount of color which is seen. If the biliary or other color comes to the passage, it is the proper time to administer astringent substances, but previous to that their administration is not only useless, but apparently harmful.

It is not necessary at this time to speak of the necessity of using the hot bath or hot applications in the advanced stages of summer diarrhœa of infants, for even in those cases where the rectal temperature shows that the centre of the child's body is at fever heat, if the child is quickly *dipped* in the hot water, the application of the heat to the surface draws the hot blood from the centres of the body, equalizes the circulation, and indirectly reduces temperature by increasing the radiation of heat. As we have just said, the presence of a high central temperature contraindicates a prolonged hot bath, but in collapse a prolonged hot bath is often very useful. In nearly all cases the hot bath will remove the nervous jactitations and permit of a quiet sleep, which is often exceedingly important to the patient.

Finally, it may be laid down as a rule that astringents are not to be given to these cases, and that as soon as the bowel is free from irritating material the diarrhœa will cease.

By far the best method to be employed in every case, with or without those measures which have just been named, is enteroclysis, as described in the GAZETTE for October, 1892, or in the article of Dr. Müller, just concluded in this number.

THE ACTUAL CAUTERY IN THE TREATMENT OF CORNEAL ULCERS.

THE treatment of purulent ulcers of the cornea by cauterization with the actual cautery is a therapeutic measure so well established that it would seem the last word which is needed had been said upon this subject. Occasionally, however, we find recorded expressions calculated to throw doubt upon the value of the method, or, at least, upon its value as compared with the results obtained by other procedures. Thus, Valude (*Bulletin Clinique Nationale Ophthalmologique de l'Hospice des Quinze-Vingts*, année 1892; Paris, 1893, p. 39) remarks, "I am less and less a partisan of the application of the actual cautery to the cornea; as Professor Snellen has said to the recent Netherland Congress, the cauterization damages the cornea more than the ulceration itself. I make an exception of ulcers complicated with dacryocystitis, which threaten the eye with panophthalmitis and must be arrested at any price."

It is true that the great majority of corneal ulcers do not require destruction of the affected tissue by chemical or actual cauterization; disinfection of the conjunctival sac, atropine (under some circumstances, eserine), protective or compressing bandages, and suitable constitutional remedies suffice. For those ulcers, however, as Fuchs expresses it, "which, from the purulent hue, or from the strong infiltration of their surrounding parts, show a rapidly-*progressive* character, we must employ other remedies. These are hot compresses, iodoform, the actual cautery, and paracentesis of the anterior chamber." Now a large amount of evidence has accumulated which proves that the actual cautery is the most potent of these four remedies or measures for arresting many forms of rapidly-progressive ulcers of the cornea, and not alone those complicated with dacryocystitis; therefore the objection to the method evidently is not that it fails to check the ulceration, but that the resulting cicatrix is more dense than that which results when healing has been secured by some other procedure.

This question has been carefully studied by those who have most strongly endorsed the use of the actual cautery. It will be remembered that Nieden, when he reported his first series of one hundred cases of corneal ulcer treated with the actual cautery, eighty-three per cent. of which were of a serious nature, and more than sixty per cent. being hypopyon ulcers, dwelt upon two points,—namely, that not a single eye had been lost, although other methods showed from 1.4 per cent. to 11.5 per cent. of phthisis bulbi, and that the ulcers so treated exhibited only a slight tendency to leave the marked cicatricial opacities which otherwise so commonly occur after these processes. In support of this position he quotes the experiments of Sattler, demonstrating the process of repair in corneal tissue after the application of the actual cautery, and calls attention to the fact that a true leucoma occurred in only twelve of his cases, the remainder having healed with more or less marked maculas. Necessarily, as Fuchs says, "an opacity remains permanently at the cauterized spot; but since we cauterize only such places as would otherwise go on to purulent disintegration, the final opacity is not greater than it would have been without the application." In the belief of Nieden the opacity is not so great, and this belief is shared by many surgeons.

In the cases to which the actual cautery is applicable, the class which is generally designated "infectious ulcers" heads the list. Their characteristics are too well known to need repetition. The method, however, finds application in the management of so-called scrofulous ulcers when they are deep and tend to spread, of sluggish corneal infiltrations which decline to heal under ordinary measures, of fascicular keratitis, and of certain types of herpetic ulceration (dendritic keratitis). These, as Nieden declares, may also be classified with the infectious types or those depending upon mycotic infection.

So far as the technique is concerned, it is summed up in the sentence previously quoted from Fuchs, to "cauterize only such places as would otherwise go on to purulent disintegration." Since the introduction of fluorescine, the area requiring destruction can be exactly outlined, and there is no need to follow the advice which is sometimes, but, as we think, improperly, given to carry the burning into sound corneal tissue. While the cauterization should be thorough in extensive ulceration, if excessive reaction is feared it often suffices to destroy the most infiltrated margin of the lesion, or that part from which the process is most likely to spread.

Far from being a "partisan" of any method of treating corneal ulcers, we are nevertheless persuaded that the application of the actual cautery is not limited to those types of ulcerated keratitis complicated with dacryocystitis, and that its use in suitable cases is not followed by damage more extensive than the ulcer itself would produce.

THE ULTIMATE RESULTS OF ORCHIDOPEXY IN CASES OF UNDESCENDED TESTICLE.

UNDESCENDED testicle, though not rendering the bearer of this malformation impotent, even, indeed, appearing to increase sexual desire and power of intercourse, is accompanied by sterility, the glands remaining small in size and physiologically inactive. On the theory that this lack of development is due to malposition, the operation of orchidopexy, or placing the testicle in its normal position, has been proposed, and, in so far as the direct results are concerned, has been practised successfully many times. Briefly outlined, the operation consists in cutting down upon the testicle, which is usually found in the inguinal canal, though it may be entirely within the abdominal cavity, freeing it from its attachments, forming a sac for it at the expense of the peritoneum if this be possible, drawing it into the scrotum, and anchoring it in this position. Reporters are agreed in stating that the testicle thus placed in its normal position increases in size, and argue that ultimately it will become physiologically active; but since the operation, at least in its general recognition as a proper surgical procedure, is modern, and since it is usually performed during infancy, and incidentally in the course of surgical procedures adapted to the relief of strangulated hernias, which so often complicate these ectopic testicles, the ultimate result as to function has remained a matter of conjecture. Some light is thrown upon the question by a communication from Guelliot. He operated upon a boy, aged fifteen and a half years, suffering from double abdominal ectopy and lateral eventration. In the course of the operation for this last condition the left testicle was carried from the abdominal cavity and secured in the scrotum, a tunica vaginalis having been formed at the expense of the parietal peritoneum. Four months later the testicle was found slightly adherent near the root of the penis, but not exhibiting a tendency to retract within the inguinal canal; it had distinctly increased in size. Two years later the patient again came under observation. The right testicle was still within the abdomen; the left was freely movable beneath the skin of the scrotum, and was of normal adult size. Pubic hair was growing from the upper portion of the left scrotum and the neighboring pubic surface; the corresponding regions of the right side were absolutely free of hair. The patient had vigorous erections, and ejaculated a fluid quite similar in appearance to normal semen. On microscopic examination of this fluid it was found to contain flat epithelial cells, pigmented granular masses, and polyhedric and acicular crystals. At first spermatozoa seemed to be absent, but on careful, prolonged examination a few were found, some absolutely normal in appearance, others deformed and broken.

This observation, though strongly supporting those who advocate the operation of orchidopexy from a functional stand-point, by no means conclusively settles the question as to the beneficial effect of surgical interference.

It is only when such cases are multiplied that we can judge with reasonable certainty as to the relation between cause and effect. In the mean time it seems clear that where the testicle has not descended by the tenth or twelfth year, there is almost no chance of this occurring spontaneously, and that the operation of orchidopexy is definitely indicated. Before the testicle is anchored in its proper position all the fibres of the cremaster should be divided, since in some cases contraction of the muscle has drawn the testicle back into the inguinal canal after the external wound was healed.

THE ABUSE OF MEDICAL CONFIDENCE.

IN the *New York Medical Journal* for January 28, 1893, Dr. W. A. Hammond published an article entitled "On Certain Organic Extracts, their Preparation, and Physiological and Therapeutical Effects," in which he highly recommended the employment of a number of animal extracts in the treatment of various diseases. Statements of somewhat similar preparations had been previously made by Brown-Séquard, Constantin Paul, and others in France, and the professional mind was therefore ready to accept with little scrutiny assertions of an encouraging character if they originated from the pen of a member of the profession who was widely known and who was supposed to be reliable in scientific statement. Physicians are forced to accept without careful study the statements of those who, by training, are specially qualified to decide as to the value of new remedies, and the position occupied by the expert is therefore peculiarly sacred in that he has the implicit trust of his fellows. Doubtless it was the recognition of this fact which caused the editor of the *New York Medical Journal* to admit to his columns the article in question without careful inquiry as to there being a possible commercial bias in its intent. Unfortunately, there is such a possibility, and we give the facts in order that our readers may decide for them-

selves the value of such a contribution to scientific medicine, not to speak of the question of ethics. Dr. Hammond is the president of a company claiming a proprietary right in "cerebrine," and similar compounds, and it is alleged that he received a handsome compensation for his services, and finally that he claims that it takes six months to manufacture these substances, which gives his company an opportunity to monopolize the market and prevent competition in the manufacture and sale of what he claims to be one of the most valuable additions in therapeutics.

It is not necessary for us to point out the wrong of such abuse of medical confidence, or the fact that scientific statement must often fare badly when tinctured by commercial interest.

Finally, we wish to call attention to the able summary of the value of animal extracts in therapeutics which we abstract from the *British Medical Journal* in our Progress columns of this issue, in which grave doubt is thrown upon the likelihood of any such derivatives being of service to practical medicine.

Reports on Therapeutic Progress.

THE USES OF DIGITALIS.

At a recent meeting of the Société de Thérapeutique, Huchard (*L'Union Médicale*, May 13, 1893) discussed the uses of digitalis, calling especial attention to the causes of the lack of success in the employment of the remedy. He laid stress, in the first place, on the advisability of obtaining a good preparation of the medicament. He recommended an infusion or a simple maceration of the leaves, advising the following formula:

℞ Digitalis, 1 gramme;
Boiling water, 200 grammes.

This combination to be given in spoonfuls as indicated. He thought the crystalline digitaline of the Codex a good preparation, but condemned the amorphous body as totally unreliable. The author said that in the hyperpyrexia of acute articular rheumatism, typhoid fever, and pneumonia, digitalis had been employed to reduce the fever, but that it was inferior to antipyrin and the cold baths, particularly in the first-named disorder. Typhoid fever patients seemed to bear digitalis badly, since the drug had a tendency to excite the pneumogastric nerves. Digitalis was indicated in pneumonia only when the myocardium became weak. The drug is contraindicated in all valvular affections characterized by regurgitation and insufficiency, whether of aortic or mitral origin, when these diseases are insufficiently or too much compensated in both the asystolic and hyposystolic periods; but that it is indicated in all valvular or arterial cardiopathies when they are insufficiently compensated in both the hyposystolic and asystolic periods. In the latter stages of cardiopathies there is excessive dilatation of the heart, and it is then that digitalis is useless; but if, in these cases, a bloodletting to the amount of from two hundred to three hundred grammes is practised, the drug administered then will be found to exercise its power. It is, again, without effect in the presence of pronounced œdema, when the capillaries and the small arterial system become non-compressible; this peripheral obstruction can only be relieved by scarification or other means. Once more, the fulness of the vascular system may be of a visceral origin. In these cases the liver becomes congested and enlarged; this hepatic congestion rebounds, as it were, upon the right cavities of the heart, and forms another obstacle to the action of digitalis. If, in such instances, a few doses of calomel are given and wet cupping over the region of the liver applied, digitalis will then produce its good effects. On the other hand, a simple hepatic congestion, accompanied by marked sclerosis of the liver, gives rise to an ascites that will resist completely the action of the drug; because it must not be forgotten that digitalis is only useful in dropsies of cardiac origin. In regard to kidney-disease, interstitial nephritis and the large amount of albumin in the parenchymatous variety are not absolutely contraindications for the use of digitalis, since this acts as a diuretic by influencing the vessels. The remedy is not contraindicated either in myocardiac degeneration, nor in all cardiopathies characterized by an increase of arterial pressure, since in such cases, acting as a diuretic by further increasing the pressure, the agent is able to re-establish a desired equilibrium. Digitalis is a regulator of the entire circulatory system. It is dangerous, however, when the cardiac fibre has become profoundly altered, as in arterio-sclerosis. Neither is it effective in tachycardias resulting from compression of the pneumogastric nerves, in essential paroxysmal tachycardias, or in those, again, coming on during the hyposystolic period of certain cardiac affections. Digitalis does not always do good in cardiac dyspnœa, as this phenomenon may be of toxic origin simply, in which case a milk diet is called for. If, at the beginning of cardiopathy, there should appear

gastric disturbances, such as hypochlorhydra, these must be attended to before giving the medicament. Finally, during digitalis medication, or when the action of the drug persists for eight days after its administration, no antagonistic drugs should be given, such as morphine, belladonna, antipyrin, ergot, which diminish diuresis; trinitrine, nitrite of amyl, the iodides, which lower the arterial pressure (physiological antagonists); the preparations of lead or tannin (chemical antagonists), which precipitate the drug in question. The author, in conclusion, advises the administration of a solution of the crystalline digitaline of the strength of 1 to 1000, in daily amounts of 50 drops at one dose, this quantity containing one milligramme of the active principle. Diuresis appears on the evening of the day in which the drug is administered, or on the following morning.

TREATMENT OF LEAD COLIC BY LARGE DOSES OF OLIVE OIL.

Four interesting cases of lead colic—three acute and one chronic—are detailed by COMBEMALE (*Bull. Génér. de Thérapeutique*, May 30, 1893), in which the administration of large quantities of olive oil gave the most satisfactory results. The drug was found to diminish pain and to clear out the intestines, two essential considerations in the treatment of the malady. From a study of the subject the author concludes: 1. That large amounts of olive oil, about 200 grammes at a time (it is advisable to diminish beforehand the excitability of the stomach by means of cocaine, menthol, etc.), exercise in lead colic a mechanical and sedative action,—an action not easily or surely obtained by other therapeutic means. 2. That in daily doses of about 50 grammes, olive oil, in one chronic case of the disease, has destroyed all the nervous symptoms present. If this last excellent result be confirmed by future observations, a new hygienic method shall have been found to prevent the occurrence of chronic lead colic. Without disregarding the hygienic measures recommended heretofore to those engaged in lead-works, a daily administration of small quantities of olive oil as a seasonable article, or as a medicament, may be resorted to,—a method at the same time simple and cheap.

THE ACTIONS OF MELALEUCA VIRIDIFLORA.

E. MAIN (*Bull. Génér. de Thérapeutique*, May 30, 1893) contributes an article on the actions of the above plant. *Melaleuca viridiflora* is a species of cajeput, and belongs to the *myrtaceæ* family. Among other products, it contains an essence which appears to be a natural terpinol. The essence is not destitute of poisonous properties, but these are feeble. The drug is not toxic to rabbits in doses of 4 grammes per kilo of the body-weight. The local action is slightly irritant; a solution of equal parts of oil and the essence produced on the eye of a rabbit a slight congestion of the conjunctiva. The drug is eliminated by the lungs and kidneys. Shortly after its administration a not disagreeable aromatic taste is perceived in the mouth. The breath is also impregnated by the odor of the medicament. The urine exhibits, likewise, an odor of the violet, or resembles that of rose-geranium. The author has employed the essence of this cajeput in a certain number of pulmonary and urinary diseases, with apparently good results. He has given it by the stomach and hypodermically. The latter method has not been painful, the drug being, besides, well tolerated. It was found to be also well borne by the stomach when given in this way, in the form of emulsion or capsules. In bronchitis it modified and diminished the expectoration. It also acted well in tuberculosis, but so far its antibacillar properties, if it has any, have not been determined. The drug influenced favorably two cases of cystitis, in which it destroyed the bad odor of the urine. Good results were similarly obtained in a case of blennorrhagic urethritis. The writer considers the essence superior to other similar remedies, such as eucalyptus. The drug under consideration may be administered by the stomach in the form of capsules, each of these containing 25 centigrammes of the drug. Six or more capsules may be given in the course of the day. For hypodermic use the following formula is advised:

℞ Essence of *melaleuca viridiflora*, 10 c. c.;
Olive oil, washed with alcohol and sterilized, 40 c. c.

Of this solution the dose is 5 cubic centimetres, to be increased or not, according to the susceptibility of the patient.

OPIUM-POISONING IN OPIUM-SMOKERS.

In a note, MICHAUT (*Bull. Génér. de Thérapeutique*, May 30, 1893) calls attention to the fact that, contrary to popular ideas, opium-smoking always produces depressant effects. The opium-smoker, from the very beginning of the habit, loses the equilibrium of his mental faculties; cannot do properly any serious work; and what is held by him as sharpened intel-

lectual activity is nothing but the result merely of impulsiveness, his acts being really worthless. The victim loses the consciousness of his personal worth and becomes a subject of flattery and illusionary thoughts and feelings. So much for acute poisoning. In regard to chronic cases, patients become general paralytics and monomaniacs, and the drug, far from sharpening their mental faculties (as they in their distorted minds believe), causes in them anæmia, general debility, and intellectual weakness. The therapeutic means to combat all these cases appear to be sufficiently plain, and, among others, the author recommends the establishment of severe penalties for opium-smoking *habitués*, and the removal of these from places where the custom becomes almost a law.

THE PHYSIOLOGICAL ACTIONS OF APOCODEINE.

A study of the physiological actions of apocodeine is contributed by L. GUINARD (*Lyon Médical*, May 21 and June 4, 1893). Important conclusions are drawn by the author. Apocodeine is a somniferous medicament, producing sleep without previous marked excitation, and especially without provoking *nausea and vomiting*. The sleep is slight and fugacious; it cannot be compared to the profound narcosis caused by morphine. A dog under the influence of apocodeine can be easily awakened, the animal being apparently in a state of quiet and not of sleep. In soporific doses, the drug slightly modifies sensibility and the conductibility of the nerves. The semiparalysis of the hind extremities, not observed by Claude Bernard in the case of codeine, always appears after the administration of large doses of apocodeine, but is not very marked. After the elimination of the drug, which appears to be rapid, the return to full consciousness is unattended, in the animal, by the hebetude, the distraction, and the stupor so common under the action of morphine. Like codeine, however, apocodeine is able to increase reflex action, and in quantities of from .5 to .6 gramme per kilo of the body-weight, it causes convulsions and tetanic spasms. Apocodeine, therefore, is a nervine, acting primarily upon the brain. In large amounts, the convulsant actions of the drug manifest themselves secondarily, and in a rapid manner, surpassing all other actions in intensity. The convulsant effects come on rapidly, masking the cerebral action, especially when the drug is introduced into the system directly through the circulation. The actions of apocodeine upon the centres, under all circumstances, are not, however, very pronounced; they quickly disappear without the production of consecutive untoward effects. Under toxic doses, the animal dies in violent convulsions. All these results were obtained from experiments performed on the dog.

THE ANTIPYRETIC ACTION OF GUAIACOL LOCALLY APPLIED.

An interesting contribution upon this subject is published by L. BARD (*Lyon Médical*, June 4, 1893). The author details four cases of tubercular disease in which the local application of guaiacol caused a marked reduction of the pyretic temperature. The results obtained in one of these cases deserve special attention. The patient experienced from the beginning of the treatment a marked amelioration, and not only did the drug keep the temperature down, but the appetite returned, and in a short time the patient, considering himself cured, left the hospital accordingly. The pure guaiacol being a liquid body, of slightly syrupy consistence, may be painted over the thigh or the back, covering the corresponding part with an impermeable towel. Dosage can thus be managed easily. The quantity employed at the beginning was 3 grammes, decreasing this amount at each treatment. Thus applied, the drug did not cause any irritation of the skin. According to the author, the antipyretic action of guaiacol, employed as described, is not confined to tuberculous cases. The medicament has given the same satisfactory results in other pyrexias, such as in that of erysipelas and pneumonia. The drug (with the exception of one of the tuberculous cases) never produced albumin in the urine. The albuminuria present in this case was not modified by the agent. On the whole, the therapeutic method described, as regards the local use of guaiacol to reduce febrile temperatures, is encouraging and worthy of further trial.

THE USE OF PILOCARPINE IN THE TREATMENT OF DIPHTHERIA.

In the *Australasian Medical Gazette* for April, 1893, HIRSCHFELD reports his experience with pilocarpine in diphtheria. He generally acts as follows: A strong purgative is given in the first instance, calomel together with compound powder of jalap, while the pilocarpine mixture is prescribed at once. If the child is able to gargle, chlorate of potassium is chosen for the purpose; if not, attempts should be made to make it gargle with some boiled water,

to which some table salt may be added. If the patient is too young, it is not advisable to add the table salt, because he will be likely to reject the gargle on account of its taste. Externally a moist compress may be applied in the ordinary way,—a napkin dipped into cold water and wrung out, a piece of water-proof sheeting or gutta-percha paper, and that to be covered by a roll of flannel; the moist heat favors the resolution of the diphtheritic deposits.

With regard to diet, milk should form the principal food of the patient, which may be taken either pure or preferably mixed with equal parts of soda- or Spa-water; a teaspoonful up to a tablespoonful of brandy may be added to the milk. A raw egg swallowed whole sometimes eases the patient considerably. To counteract any depressing effect pilocarpine may have upon the heart, stimulants are strongly to be recommended; wine is, in the writer's opinion, preferable to whiskey or brandy given neat. There are several official preparations, which may be divided into two classes:

1. Such as are prepared from the original leaves of *Pilocarpus pennatifolius,—infusum, extractum,* and *tinctura jaborandi;* 2, the salts of the pure alkaloid itself, pilocarpine, that represents the active principle contained in the plant. The preparations obtained from the jaborandi leaves cannot be recommended for therapeutical use, though to judge from their number contained in the Pharmacopœia they seem to have met with more favor than pilocarpine. In the first place, they are uncertain as to the quantity of the alkaloid contained in them; secondly, they contain, besides pilocarpine, another alkaloid, jaborine, which has an effect exactly the opposite to pilocarpine, and to which most of the unpleasant results observed under the exhibition of jaborandi leaves must be attributed. Merck first isolated from the leaves the alkaloid and its hydrochloric acid compound, the *Pilocarpinum muriaticum* of the German Pharmacopœia. The official English preparation is the nitric acid salt. Both compounds are white crystallizable powders that dissolve readily in water. The original formula advised by Guttmann for a child about five years of age was,—

℞ Pilocarpin. hydrochlor., gr. ss;
Pepsin, gr. x;
Acid. hydrochl., ♏ii;
Aquæ, q. s. ad ℥xxii.
Sig.—A teaspoonful every hour.

But in the majority of cases it is not necessary to administer as much pilocarpine as recommended above, though children bear the drug comparatively better than grown-up people. The individual susceptibility to the alkaloid varies to a very great extent, and it is far better to feel one's way by beginning with small doses, and only increasing them if they prove insufficient in attaining the result desired,—namely, perspiration and salivation. It will thus be possible to avoid in nearly all cases the ill effects reported by other authors who employed too large doses at the beginning. It is advisable to combine every dose of pilocarpine with some alcohol to counteract any depressing effect and to correct the taste with syrup of orange, which generally proves agreeable to the little patients. Thus, for a child six years old:

℞ Pilocarpin., gr. ⅓;
Spr. vin. gall., ℥iv;
Syrup. aurant., ℥i;
Aquæ, q. s. ad ℥iii.
Sig.—One teaspoonful every two hours.

As a rule, this will be sufficient for the purpose; if not, it can readily be increased and taken every hour. The action of the medicine is generally very satisfactory. The physiological effects of the pilocarpine—sweating and salivation—begin to show themselves sooner or later, according to the individual susceptibility to the drug, generally within twelve hours. The temperature goes down as soon as perspiration has fairly set in, while the casting off of the false membrane often takes place in surprisingly quick time. It is not advisable to discontinue the pilocarpine at once, but break it off gradually.

The objection that may be raised against the use of any drug in diphtheria—namely, that it cures only slight cases that would have got better without any treatment—may also be raised against pilocarpine; but a case that a few months ago occurred in the writer's practice certainly points the other way. A child died of diphtheria in the Children's Hospital. A few days afterwards the mother of this child complained of sore throat, and the following day two other children of the same family were attacked with the same complaint, the mother having evidently been the medium conveying the infection from the first child to the other children. The inspection of the throat left no doubt as to the nature of the case. The treatment as described above was immediately instituted, with the result that the diphtheritic membrane had disappeared in every case within three days.

Various untoward results have been reported by various authors, but that is generally due to

incautious use of the drug, more particularly to the administration of too great doses. Dr. Hirschfeld has seen unpleasant symptoms arise in only one case a few years ago in Germany.

During an epidemic of diphtheria that was raging at Frankfort a school-master brought the disease home from his school, and infected his wife and four or five children. Pilocarpine was prescribed for all of them, the same mixture, but the different patients had, of course, to take different quantities. By mistake the mother took four or five doses of exactly double the quantity she was ordered,—a tablespoonful instead of a dessertspoonful,—when suddenly a strong anxiety overcame her. She began to vomit and looked very pale. The pulse was 120, but regular. All these symptoms disappeared so quickly when the pilocarpine was discontinued that the medicine could be resumed on the evening of the same day.

Contraindications against the use of the alkaloid of the *jaborandi* leaves are organic diseases or fatty degeneration of the heart. It is wise to watch the pulse closely, and note at once any undue acceleration which, together with the retching, usher in the pilocarpine-poisoning. If such should have taken place, it is necessary to stop its administration immediately. The alarming symptoms will disappear very quickly with the suspension of the drug. The author emphasizes the fact that no ill effects will be observed if the quantity of pilocarpine administered is kept within certain limits. The German Pharmacopœia allows as maximum dose for the adult ½ grain per single dose, and one grain per diem of the muriatic salt of the alkaloid. In severe pilocarpine-poisoning, atropine must be used as an antidote, but it is not probable the physician would push the drug to that extent.

STRYCHNINE IN SNAKE-BITE.

Dr. T. E. Smith, of Campbelltown, New South Wales, reports in the *Australasian Medical Gazette* for April, 1893, the following case in which strychnine proved useful in snake-bite:

F. W., aged ten and a half years, was bitten on the dorsum of the left foot at 10 A.M. 8th of December last. He was then over a mile from his home, so his father immediately scarified the wound and applied a ligature below the knee.

The boy then started to walk home, and when about half way he got a violent pain in the stomach and commenced to vomit. He managed to walk the remainder of the way, and on arrival he was given a glass of brandy and water, which he vomited at once.

The author was then called in, and when he got to the house was told "that the boy had just had convulsions, was vomiting blood, and they thought it was all over with him."

The patient was in a semi-comatose condition on the veranda, lying on his back.

He was extremely pale; skin cold and moist; respirations hurried; pupils widely dilated and with but little reaction to light; frequent vomiting mixed with blood; temperature, 95.8° F.; almost pulseless.

11 A.M.—15 minims liq. strychniæ (B. P.) was subcutaneously injected, and five minutes later the patient roused himself and said "he did not feel so sleepy," and his appearance began to improve.

11.30 A.M.—Still vomiting; blood increasing in quantity.

11.45 A.M.—Complained of headache, and felt sleepy again.

12 M.—Had a return of all the previous symptoms; temperature, 96° F.; pulse, 114; injected 12 minims liq. strychniæ (B. P.).

12.05 P.M.—Felt better, but vomiting continued.

12.30 P.M.—Had a second attack of convulsions.

1.45 P.M.—Greatly improved; vomiting ceased; sat up and took a drink; temperature, 99° F.; pulse, 124.

4.30 P.M.—Feels well; temperature normal; pulse, 116.

At 10 P.M. the patient had had two hours sleep and was going to have some solid food. The following day he was quite well and running about, and said he was none the worse of his snake-bite.

THE NITRO-HYDROCHLORIC ACID BATH IN THE TREATMENT OF CHRONIC LIVER CASES.

Judging from the frequency with which uncured chronic liver cases come under observation,—cases which have undergone a long course of treatment, including, it may be, drinking and bathing in certain Continental waters or a sojourn at some sea-side resort, but in which the acid bath has formed no part,—Francis (*Medical Press and Circular*, June 7, 1893) is inclined to believe that, for some reason or other, this valuable remedy has fallen considerably into disuse. And yet for the cases in question,—for simple congestion, with or without enlargement (even sometimes for functional derangement only), for torpidity, where the

tapotement form of massage is likely to do so much good if it be sufficiently prolonged,—for such cases as these the nitro-hydrochloric acid bath, giving, as it generally does, such highly satisfactory results in a comparatively short space of time, should be among the earliest of the remedies employed. The local application of the fluid directly over the region of the liver, either in its entirety or only over that part where the organ is evidently affected, Francis advocates from both personal and general experience,—the local application in preference to the bath proper (in which there is of necessity a break of some hours' duration in the treatment), because the salutary effect is continuous and the cure consequently more speedy. In extreme cases both plans may be adopted. Instructions for making and applying the bath locally are given in Squire's edition of the British Pharmacopœia; but whereas, following Sir Ranald Martin, who introduced into English practice the remedy first substituted for mercury in hepatic disorders by Dr. Helenus Scott, of the Bombay army, it is there directed that the entire bandage encircling the abdomen shall be soaked in the acid, a fold of soft flannel (a piece of lint would do) so soaked and wrung out is quite sufficient. The full amount of bath prescribed in the Pharmacopœia—eight ounces of acid to a gallon of water—need not, of course, be used. The author usually puts a fourth of the quantity into two pint (twenty ounces in each) bottles of water; and, when required for application, warms the mixture contained in one of them in a jug of water hot enough to raise the temperature of the bath to over 90° F., and then, pouring the fluid into an internally-glazed earthenware vessel,—a large glazed pudding-basin will do,—uses it instantly. The oiled silk, cut to thoroughly cover the fold of flannel or lint, but no more, should fit close; and the bandage, whose width will depend upon the nature of the case, should be made to encircle the abdomen firmly, to avoid all risks of overflow and destruction of clothing, of which, however, there need be no fear if the fluid has been well wrung out. When done with, the fluid is poured back into the bottle, which, with the remainder of the various articles used, should be kept separately on a shelf, out of the easy reach of children and cats. The same bath may be used several times. The whole process is exceedingly simple and easily managed by an intelligent patient after the first or second application by the doctor.

In the milder cases recovery, as a rule, is rapid, the local pain, the enlargement also, if any, and the various dyspeptic symptoms of which the disordered liver was the cause—*e.g.*, the anorexia, the sense of fulness after eating, the flatulence, the characteristic lassitude and depression of spirits, etc.—speedily disappearing. In the more serious cases recovery will necessarily be slower. The writer states that he had recently such a case under his care in the person of a lady, sixty years of age, the widow of an Indian officer. It commenced with simple congestion, the result of a chill, followed by enlargement and jaundice, and accompanied by the usual dyspeptic symptoms. The patient had been under treatment for several weeks, but nothing seemed to do her any permanent good. An eminent physician had ordered her to Brighton, from whence she returned in a few days worse than ever. The practitioner at Brighton, whom she consulted, told her that the climate being then cold—it was April—was not suited for her case, and the sooner she left the better. After one week's treatment with the bath, locally applied, the lady showed symptoms of improvement, and within the month had perfectly recovered. She is now in excellent health.

On sensitive skins the surface is sometimes much reddened, a crop of pimples accompanying the application. In moderation this is of no consequence, though occasionally in such cases it may be necessary to intermit the treatment. The external results are no measure of the benefit to the organ. The action of the acid is not only that of a counter-irritant; indeed, that is its least recommendation. Its efficacy depends, it is assumed, upon its absorption and the consequent supply of oxygen to the blood, promoting thereby the formation of fibrin, the restoration of tissue, and, in combination with dilute nitro-hydrochloric acid by the mouth (with or without taraxacum), acting as a powerful tonic to the liver. The treatment is not suited for cases of advanced structural disease, though it may answer sometimes in simple incipient induration.

ANIMAL EXTRACTS AS THERAPEUTIC AGENTS.

The THERAPEUTIC GAZETTE has contained such complete abstracts of the articles upon the employment of animal extracts in the treatment of various diseases that its readers can rest assured that they are in touch with all the literature worth noting upon this topic. It will interest them, therefore, to read a summary of the present status of the employment of animal

extracts in therapeutics, which forms a leading article in the *British Medical Journal* for June 7, 1893.

It is now some years since Brown-Séquard announced the wonderful effects which followed the subcutaneous injection of testicular extracts, as exemplified in his own person; and though many jeered him as the discoverer of the secret of perpetual youth, the notion has steadily gained ground that there is, after all, something in it. Since, also, the success that has followed the injection of thyroid extract in myxœdema, we can hardly wonder that this belief has increased.

Physiologists have recently been making a number of observations, which show that many organs do more than what was formerly regarded as their functions. The experiments of Bradford on the kidney have shown that this organ does something else in addition to excreting urine; those of Minkowski and Von Mering on pancreatic diabetes, of Langlois and Abelous on the suprarenal capsules, and of Horsley and others on the thyroid, have led to the introduction of the expression "internal secretion." We think that this term is a rather unfortunately chosen one; but it, nevertheless, expresses that the organs in question have some action on the blood, and through it on the tissues generally, which influences their metabolic changes. Previous, however, to any of these experiments, it was a perfectly well recognized fact that removal of the essential organs of generation had a profound influence on the structure of the whole animal, and also on the mental tendencies of the individual.

But the precise *modus operandi* is in all these cases still a sealed book. The composition of the internal secretion, where it exists, is unknown. It is, however, presumed that an extract of the fresh organ must contain the active substance in the conglomeration of bodies which are extracted by glycerin, salt solutions, or whatever the solvent used may be. There can be little doubt that these substances are of a complex organic nature, substances which call on the resources of the organism to manufacture for itself. We can, therefore, hardly be surprised that if these substances are administered to a debilitated person unable to make them for himself, some amount of temporary stimulant effect is produced, and in one instance, at least,—that of myxœdema,—the curative result has justified the method used.

Fully granting this, we still feel compelled to doubt many of the other so-called cures. There is in all men a natural tendency to draw general conclusions from particular instances; to seize an idea and run it to death. In the causation of disease, at one time it is germs, at another ptomaines, at another toxalbumoses, that are invoked to solve every mystery and explain every difficulty. In the treatment of disease, at one time mineral drugs, at another chemical drugs produced in the laboratory, are fashionable; at one time protective inoculation, at another curative inoculation, is in the ascendant. All causes and all treatments have their proper places, but we may hope that we are not now to suffer an epidemic of universal injections. We hear of some injecting nerve extracts to cure neurasthenia and locomotor ataxy, heart extracts to cure heart-disease, pancreatic extracts to cure diabetes, testicular extracts to cure old age and many other evils, including even phthisis and cancer.

Manufacturing chemists are making extracts not only of thyroid, but of nearly every organ in the body, even including the pituitary body, this last for the cure of acromegaly. We find medical men writing of these ideas and of the cures achieved in the most sanguine strain, and often upon no better evidence than quacks produce for their "cures." These injections may be, and often are, extremely poisonous; for although Brown-Séquard states that he has observed a rise of temperature only twice in one hundred thousand injections, we must remember Woolridge's experiments; and we recollect, too, having heard of sloughing following injection of pancreas for diabetes. This last result is hardly surprising, for a pancreatic extract will contain not only the "internal secretion," but the external secretion also, and trypsin is a very powerful digestant, especially of tissues prone to disintegrate, like those of a diabetic.

Perhaps Massalongo has hit the right nail on the head in an article he entitles "A New Phase of Suggestive Therapeutics." He found that in healthy animals testicular fluid had no effect; that in cases of disease the modifications are slight and transitory, and due to psychical tension and excitement; that in organic disease the improvement is due to suggestion and the influence of the imagination; and that such curative effects are best marked in cases of hysteria and neurasthenia when there are expectations of relief, and that equally good results were here obtained by inert substances with equal facility.

One more quotation in conclusion. Professor Brown-Séquard says, "To our utter surprise, the disease that gave the greatest number of ameliorations is cancer superficially situated." We confess that we cannot share this surprise; the recent developments of Mat-

teism should have prepared Professor Brown-Séquard to guard against the fallacies into which he has unwittingly dropped.

ICE IN THE TREATMENT OF ACUTE PNEUMONIA.

Within the last year we have published among the Original Articles and in the Progress columns of the GAZETTE a number of papers upon the employment of ice or cold as a therapeutic measure in other ways than by the Brandt treatment of typhoid fever. Particularly to be remembered are the papers of Drs. Jackson and Kinnear. In the *Medical News* for June 24, 1893, MAYS contributes an article upon the subject. He has already written two papers upon it, and his final article is in the form of a collective report, in which he details some fifty cases. The conclusions which he reaches in the analysis of these cases are of interest.

1. The Resolving Power of Ice on the Exudation.—This is a marked feature in its therapeutic action, and must be regarded as one of the strongest factors in its curative influence. This can at least be partly explained on the following basis: The most apparent lesion in croupous pneumonia is an enormous distention of the pulmonary capillaries, with partial or complete stasis of the blood in these vessels, exudation of the fluid constituents of the blood, and diapedesis of white and red blood-cells into the alveoli of the lung. It is well known that cold has the power of contracting the blood-vessels, and from this action one can understand why it should exert a beneficial action in pneumonia, by giving tone to the capillaries, by restoring the normal blood-flow, and thus checking the leakage. But there is often reason for believing that it also dissolves the exudate in the pulmonary alveoli. For example, there may be a pneumonic area in which there is absence of respiratory murmur, with the presence of a flat percussion-note and bronchial breathing, indicating, beyond doubt, that the process has passed beyond the stage of engorgement and into that in which the exudation has taken place into the alveoli; yet the application of ice will, in a remarkably short time, develop a new group of physical signs, such as crepitation, reappearance of the respiratory murmur, diminution of flatness, etc., indicating that a break-down occurred in the exudation. This has not only been observed by Mays, but is dwelt on by Dr. Lees, who says, "In many cases I noticed a striking arrest in the development of the physical signs," and that the ice-bag "distinctly tends to repress the inflammatory process in the lung."

Influence on Symptoms.—No less decided is the influence of the ice on some of the most prominent symptoms of pneumonia. The pain, difficult respiration, cough, and expectoration are remarkably relieved, and the temperature is frequently depressed two or three degrees in the course of half a day. The beneficial influence exerted on these symptoms produces a very agreeable effect, and often makes the ice acceptable to those who at first protest against its use. This Mays noticed in most of his cases, and it has been noticed by others.

Is the Ice Injurious?—Mays's rather limited experience with the ice treatment does not show that it is accompanied or followed by any evil consequences, nor have any of those who have reported cases to Mays observed any such results, although some of them kept the ice applied for two weeks. Dr. Lees says, further, "I have never seen any harm follow from the employment of the ice-bag in pneumonia."

Ages of Patients.—It is important to note in this collection that the ages of the patients in whose cases the ice was applied varied from infancy to old age, the youngest being six and a half months old, and the three oldest sixty, sixty-five, and seventy-four years respectively.

The Results.—It may be said, without claiming too much, that the results obtained from the ice treatment of pneumonia have been good. Out of the fifty cases which the author has collected, but two were fatal, making a death-rate of four per cent. In estimating this mortality-rate it must be remembered that at least one of the cases that died was an exceedingly unpromising one, being a sufferer from chronic lead-poisoning and also very intemperate; while the pneumonia which caused the death of the other one was in all probability an acute exacerbation of an old attack. In Dr. Lees's series of eighteen cases no death occurred, nor did any occur in the eleven cases reported by Dr. Jackson. Moreover, the *Lancet* of August 10, 1892 (p. 279), refers to an article by Dr. Fieandt, published in *Duodecim*, a Finnish medical journal, in which there is an account of one hundred and six cases of pneumonia treated with ice applications by that gentleman, and notwithstanding that among these there were ten cases of double pneumonia, and that the epidemic of the disease was rather severe, he had only three deaths, or a death-rate of 2.82 per cent. Adding these cases to those reported in Mays's collection, we have a total of one hundred and fifty-six cases of pneumonia treated by means of cold applications to the

chest, with five deaths, or a death-rate of 3.20 per cent.

While the number of cases reported here is not very large, it is nevertheless evident that the results of the ice treatment are much superior to any other in the author's estimation. Thus, according to Osler, the mortality-rate of one thousand and twelve cases in the Montreal General Hospital was twenty per cent., while in the Charity Hospital at New Orleans it was 20.01 per cent. Of one thousand cases of pneumonia treated in the Massachusetts General Hospital from 1822 to 1889, the mortality was twenty-five per cent. In Dr. Hartshorne's valuable paper on "Pneumonia" it is estimated that the death-rate from this disease in the Pennsylvania Hospital during the years 1884, 1885, and 1886 was a little more than thirty-one per cent. In comparing the results of the ice treatment, so far as they go, with those which have been obtained from the treatment pursued in the hospitals named, we find that the former are about eight times better than the latter. It will be of great interest to see by future clinical investigation whether these satisfactory results can be maintained, and if this can be done even approximately, it is needless to say that a pronounced advance in the therapeutics of acute pneumonia has been made.

THE HYPODERMIC INJECTIONS OF PHOSPHATE OF SODIUM.

In reviewing the literature of the subject, Ed. Égasse (*Bull. Génér. de Thérapeutique*, March 30, 1893) calls attention to the recent researches of Crocq, *fils*, who draws the following conclusions: 1. The subcutaneous injections of a two-per-cent. solution of sodium phosphate in laurel-water produce no local or general deleterious reaction. 2. With a daily injection at the start, and afterwards an injection every other day, of 1 cubic centimetre at first and then of 3 cubic centimetres of the solution referred to, a powerful influence is exercised in patients suffering from nervous disorders. 3. This measure produces a purely tonic action on the nervous system, and the results are either curative or palliative,—curative, in diseases *not* dependent on a functional disturbance of the cerebro-spinal axis; palliative, when there exist lesions of the nerve-centres. 4. The superiority of this method lies chiefly in the simplicity of its employment.

Van Bever and De Smedt, however, as the result of a fair trial of the method, have not been able to corroborate Crocq's conclusions. These authors treated fifteen patients,—four hysterical women, four neurasthenic men, two females with rebellious trigeminal neuralgia of the left side, one case of chloranæmia, two of paralysis agitans, and two of tabes. In all, they administered four hundred injections. In twelve of the cases the results were negative; in two of the neurasthenic men an amelioration was noticed during the first fifteen days, and only a female suffering from trigeminal neuralgia is said to have been completely cured.

Following the suggestions of Peter, Chéron has employed injections of phosphate of sodium to increase vascular tension, using the following solution:

> Pure phenic acid, 1 gramme;
> Chloride of sodium, 2 grammes;
> Phosphate of sodium, 8 grammes;
> Distilled water, 100 grammes.

The injections were made with aseptic instruments, and varied from 5 to 100 grammes, introduced in the trochanteric region. Under the influence of these injections there was noticed a diminution of pain in certain diseases, such as pyosalpingitis, and they also enhanced the reabsorption of pelvic exudates. An injection of this artificial serum, in doses of 5, 10, and 20 grammes at a time, produced an elevation of the arterial tension. In cases of pelvic peritonitis, acute or chronic, an injection of from 5 to 10 grammes of the liquid caused an increase of two to three centimetres, which persisted for fully twenty-four hours. Chéron, therefore, recommends at the beginning of the treatment injections of 5 to 10 grammes, repeated several times a day in the acute cases, and once every day, every other day, or every three days in the chronic cases. If said amount does not modify the arterial pressure, it must be increased to 20, 40, and 60 grammes in order to obtain permanent results. This hypertension, kept up for several weeks, gives rise to a rapid reabsorption of the exudates, followed by a notable amelioration of the digestive functions. Chéron concludes, then, that the hypodermic injections of this artificial serum constitute an exceedingly important therapeutic measure in the medical treatment of pelvic inflammations of the female. They improve the general condition of the patient, and possess a marked resolvent power on all pelvic exudates.

THE PROPHYLACTIC TREATMENT OF SCARLET FEVER.

In the *Medical Magazine* for May, 1893, Jamieson states that the best and most efficient method of limiting the spread of scarlet fever is

a subject which has occupied much attention for many years, and gives the four points which he believes require consideration, as follows:

1. The course of the infectious principle of scarlet fever.

2. The treatment of the throat and mucous membranes.

3. The management of the skin.

4. The value of "so-called" complete isolation alone, as compared with antiseptic measures and restricted isolation.

1. The Course of the Infectious Principle of Scarlet Fever.—To understand the grounds on which antisepsis in scarlet fever, to be successful, must be carried out, it is necessary shortly to recapitulate some items of our knowledge of the march of the disease. In the first place, there are only three routes by which the scarlatinal poison can enter the system. These are: (*a*) By being directly inoculated. This, though experimentally proved, happens comparatively rarely in practice, the most prominent examples being some instances of puerperal and of surgical fever. Such are, however, beyond the scope of the present paper. (*b*) By being swallowed. This is a more common source, and the medium is frequently milk, a fluid in which the virus, though introduced in extremely minute quantity, appears to grow and multiply readily and rapidly. (*c*) By inhalation, by far the most common method of transmission. It is possible that this may occur from close contact with the patient in the early stages of the disease; incomparably oftener by breathing in the desquamating flakes of epidermis so freely shed from the body. Since these retain their activity for an indefinite period if kept dry, they are the vehicle by which the complaint is perpetuated and fresh outbreaks are set up.

There is abundant evidence to prove that incubation is very short, provided the virus has obtained access to the blood; delay in the manifestations may occur in some cases from its lying dormant for a period in the crypts of the tonsils. Probably in all cases the first symptoms are manifested in the throat; the second, usually within twenty-four hours, as the eruption on the skin. It is more than likely, indeed seems almost certain, that during the period of pyrexia the virus is multiplying in the blood and is in process of being conveyed to the under surface of the integument. Deposited beneath the epidermis, it rises through its layers, and is finally cast off in flakes of exfoliating cuticle, which, poisoned by its presence, are thrown off in excessive amount. The secretions in post-nasal catarrh, in middle-ear disease, or the urine in post-scarlatinal nephritis, have not yet been proved to be infectious.

In what form this virus exists in the epidermic flakes is certainly not quite determined, but it seems to be a non-volatile, particulate body, most probably an organism, very possibly one of those described by Edington in a joint research. When exfoliated, it is ripe for reproduction so soon as it finds a favorable soil.

Desquamation may begin before the rash has faded, nay, even while it is still fully out. The author has seen it commence quite distinctly on the fourth day, or it may, in rare instances, generally in cases where some complication has arisen, first appear as late as the sixteenth. However, the day on which it manifests itself is, in the majority of instances, the ninth, tenth, or eleventh. The process of "peeling" is not completed, if uninterfered with, till, on the average, the end of the eighth week, often longer. The soles are the last parts to free themselves of their epidermic covering.

The disease has been understood, so far as he has gone, to have run a natural, undisturbed course. Little mention has been made of complications or sequelæ. Some of these are probably to be ascribed to organisms associated with that to the presence of which the disease itself is due. Thus, they may be brought about by ordinary pyogenic organisms. Among those induced by associated organisms may possibly be rheumatism, one of the earliest of the complications; while nephritis, like rheumatism, is more frequent in some epidemics and in certain families than in others. The only invariable symptom is desquamation; any one of the other symptoms may be indistinct or even absent, but this, in the writer's experience, extending now to many thousands of cases, is never absent in any genuine instance of scarlet fever.

He therefore enters a most strenuous protest against the doctrine taught by Mr. Curgenven. He argues that if antiseptic inunction be commenced on the first or second day, the full development of the disease is prevented, no sequelæ occur, and it terminates as a simple case of the fever. He further states that if the infective germs have been destroyed by antiseptic inunction, then the patient is no longer infectious, he may be considered well, and after about the tenth day, free to mix with others. So far from this being so, no more dangerous enunciation could be made in the interests alike of the public or of the patient. To believe that any inunction whatever, however powerful, employed only at a time prior to that at which desquamation ordi-

narily begins, can finally disinfect the patient, seems incredible. But, besides, to set him free at that period is to expose him to the risk of nearly every complication. Were a case of scarlet fever, however slight, to be willingly permitted to go about in ten days from the onset of the ailment, nay, in four times ten days, the medical officer of health would be justified in interfering to prevent him.

Some weeks since the administration of the biniodide of mercury was said to check the progress of the disease, to obviate desquamation, and to free from the chance of all sequelæ or complications. This has been most carefully tried in a series of cases in the City Hospital, and not only did desquamation occur, but in some it was remarkably profuse; all the ordinary complications happened as usual. It was observed in the case of two brothers occupying the same ward, that the one who took the biniodide suffered more severely from nephritis than did his brother, who had none. The case for inunction as a curative measure in scarlet fever is not one whit stronger than that for the biniodide.

Again, scarlet fever in isolated cases, when suspicion is not aroused, is rarely indeed diagnosed, even by the most experienced, on the first day, often but hesitatingly on the second by many able practitioners; so that were inunction capable of doing what is claimed for it, its virtues would but seldom be put to the proof.

2. The Treatment of the Throat and Mucous Membranes.—The tongue, though often fiery red when the white pellicle has cleaned off from before backward, seldom gives trouble, but the throat and fauces need careful watching, for it is only by early attention that we can hope to ward off those secondary accidents of inflammation of the middle ear and of the adjoining lymphatic glands in the neck, which lead to such disastrous consequences. As a rule, the very best application to the throat is a spray of peroxide of hydrogen, using the 10-volume strength. This, when applied, causes frothing as a result of oxidation, an intensification of any pre-existing white patches or deposits of exudation on the tonsils or fauces, and the revelation of many new ones previously invisible. It occasions a sensation of slight, sometimes rather sharp, pain, lasting from a few seconds to half a minute, immediately succeeded by a distinct feeling of comfort. The spray can be repeated from three times a day to once in two hours, according to the mildness or severity of the case. It should be continued, the intervals being extended as improvement progresses, till all redness and swelling other than normal to the patient have disappeared and till its application no longer induces pain. Less efficient, but useful where, from any reason, the peroxide cannot be used, is painting with a saturated solution of boric acid or of boroglyceride in glycerin, to which from ten to fifteen grains in the ounce of hydrochlorate of cocaine can be added if pain or uneasiness in the throat be complained of. In some cases, chiefly those complicated with diphtheria, a tent-bed and the use of a steam-kettle affords great relief, however, and appears to be distinctly curative. It is the steam, and not any antiseptic inhaled with it, which does good here.

The troublesome naso-pharyngeal catarrh, accompanied with copious, often fetid, muco-purulent discharge, seldom seen except in children, needs syringing with a warm solution of common salt, two drachms to the pint of water, with half a drachm of boric acid. This is repeated twice, or more frequently, in the day; the nostrils are then carefully dried with a pledget of absorbent cotton-wool, and a little cold cream, to which two per cent. of salicylic acid has been added, is gently smeared inside each nostril.

3. The Management of the Skin.—Important for the patient as the careful guidance of the throat-symptoms may be, the care of the skin is of much more consequence as regards the communication of the disease. We have seen that the virus exists in the desquamated flakes in a state ready to impart the complaint to those predisposed to its reception. It is all-essential, therefore, to anticipate this, and, so far as possible, to render these particles innocuous. It is fortunate that, with a little care, this can to a large extent be accomplished.

In the stage of exanthem we favor the development of the rash by warm baths, which at once determine the eruption to the skin and soothe the integument by moistening its congested surface. These baths are best given at night, and have a peculiarly calmative effect. In the case of adults they may have in many instances to be replaced by tepid sponging. After the bath at night the entire surface must be smeared with some oleaginous substance containing an antiseptic. At one time the author employed carbolic acid and thymol ointment, partly made up with lanolin, but this takes time to apply and is sticky, so latterly he has used almond or olive oil containing carbolic acid and oil of eucalyptus globulus, which last he had recourse to before Mr. Curgenven had published his papers on its applicability. It is unnecessary to prepare a strong solution. One drachm of carbolic acid and two to four of eucalyptus

globulus oil in eight ounces of almond or olive oil is sufficient for all purposes, if well rubbed in night and morning. No symptoms pointing to carbolic acid absorption have shown themselves since this combination has been adopted, as did occasionally occur when a carbolic acid ointment was used.

As it is highly important that desquamation should be completed in as short a period as possible, so soon as distinct evidence of peeling manifests itself, the simple warm bath or tepid sponging must be supplemented by the addition of a soap which will aid epidermic exfoliation. The one most suitable, and which fulfils all indications without the least injury to the patient, is one invented by Dr. Eichhoff, of Elberfeld. It is a superfatted hard soap, containing three per cent. of resorcin and three per cent. of salicylic acid, and is made by Mielck, of Hamburg, and by Muhlens, of Cologne. The mode in which the soap is best used is as follows: Some of the soap is rubbed on to a piece of wet flannel, and this is then used to wash the entire body, the scalp excepted, unless the head has been shaved. It is sufficient that the body be washed once daily, but the palms and soles can be washed twice; the inunction with the medicated antiseptic oil is continued twice a day, as before, the scalp being now specially attended to, as not being washed. Under this treatment desquamation is completed in all cases in less than six weeks, often in five, instead of lasting at least eight. We can limit infection by mild but constant antiseptic inunctions in the later stages when desquamation is proceeding, and can favor desquamation by the employment of a soap which hastens it, the same inunction being persevered in. The patient must be kept in bed for the first three weeks in all cases; longer if complications arise. He should not be allowed to mix with others, unprotected by having passed through the disease themselves, till desquamation is completed and until the scalp, if the hair has not been removed, has been well washed several times. When these precautions have been followed there is no further risk.

4. The Value of "so-called" Complete Isolation alone, as compared with Antiseptic Measures and Restricted Isolation.—One of the first demands made when a case of scarlet fever occurs is to isolate the patient. This is simply impossible in private, and in hospitals cannot be thoroughly carried out. In private, one cannot prevent some degree of communication between the nurse or person in attendance on the patient and those occupying the same house, and in this way infection may certainly be conveyed during the desquamative stage. In hospital, from the numbers crowded together at all stages of the disease, it is simply out of the question to insure, by any available means, absolute disinfection. No doubt all that can be done is done, but it is necessarily imperfect. Thus, isolation alone and *per se* cannot satisfactorily prevent infection.

But all this is changed if the antiseptic precautions and the mode of treatment just described are faithfully attended to and carried out. The activity of the virus is diminished, the scales are removed by washing as they become loose, nay, more, their separation is promoted, and they are cast off in a feebly-infective or non-infective condition. Of course no precaution found to be useful should be omitted. A wet sheet dipped in carbolic solution should be hung before the door of the sick-room. The nurse ought to wear a cotton wrapper or overall, which can be laid aside when she leaves the apartment, and all bed- and body-linen should be immersed in carbolic solution before being taken from the room.

As to the results of this method it is unnecessary to quote statistics, for only in one case in an experience of many years has the complaint spread. In this case it was subjected to the severest test possible. The younger sister of a girl so treated was permitted to associate in the closest manner with her sister all through her illness. She rolled on her bed and played constantly with her. In the fourth week of her sister's illness she contracted it, and had a sharp attack, though making a perfect recovery. The scales shed from the head were the probable medium of communication, as, through fear of cold, the hair being long, the head of the elder, though anointed, was not washed. Were it worth while, numerous examples of the converse, where quite remarkable protection was afforded, could be cited, but a little unbiassed consideration will convince the most sceptical.

THE PHYSIOLOGICAL TREATMENT OF DISEASES OF THE HEART.

Germain Sée's work on the "Physiological Therapeutics of the Heart" is reviewed by RENAUT (*Bull. Générale de Thérapeutique*, April 30, 1893). According to this writer, Sée considers cardiac medicaments chiefly as regulators of the heart, and they are the iodides, the remedies comprised in the digitalis group, and caffeine. 1. The iodides of potassium, sodium, strontium, and calcium form a group possessing *vaso-dilator* properties, exercising a marked *systolic* action, and influencing, be-

sides, the respiratory function. 2. The second class of remedial agents, taking digitalis as the type, act efficiently (independently of their diuretic action) on myocardiac elasticity, and produce dilatation of the left ventricle, the organ thus receiving and giving out a larger amount of blood. This class of substances comprises, besides digitalis, other more or less similar drugs, such as oleandrine, helleborine, strophanthine, sparteine, convallamarine, and adonidine. 3. Caffeine and theobromine are especially serviceable in regulating the action of the kidneys, and of which milk-sugar or lactose may be regarded as a succedaneum.

If to these three groups be added the one formed by the agents that regulate the respiration, such as the iodides and morphine, it may be said that we have gone over the cycle of remedies useful in the treatment of cardiopathies. All others may be regarded, according to Sée, as auxiliary, accessory, secondary, or pseudo-cardiac medication. Again, in the exact sense of the term, there is no such thing as a cardiac tonic. Referring to the iodides, it is held by the same authority that such remedies are not alone efficient in the treatment of syphilis and scrofula, and attention is called to: 1, their antidyspnœic and antiasthmatic action; 2, their cardiac influence; and, 3, their vascular and vaso-motor properties. Sée insists that these latter agents are indicated in the treatment of diseases of the heart to combat the following conditions: 1. During the compensatory period, marked by dyspnœa, when there is a lack of tone of the respiratory function. 2. In arteriosclerosis, especially of the coronary artery, characterized by *angina pectoris*, in which cases the iodide acts simply as a regulator of the cardiac and peripheral circulation. 3. In aortic aneurism; in these instances the iodide exercises a special influence on the aneurismatic artery. Finally, Sée concedes to the iodides a regenerating action upon the leucocytes, upon both the lymph- and blood-corpuscles.

IRRIGATIONS.

Apropos of the article in the THERAPEUTIC GAZETTE of this July and August upon the value of enteroclysis in the treatment of summer diarrhœa in infants, the following article by DR. BARUCH, published in the *Journal of Balneology* for June, is of interest:

It is an almost universal fallacy to assume that hydrotherapy concerns itself only with the application of water to the cutaneous surface, and that all its results are attributable to the improved condition of the nerve-centres which follows this peripheral stimulation. The etymology of the word indicates plainly that healing by water is its object; hence the application of pure water in any form, from ice to vapor, and in any manner, external or internal, comes under its purview.

A recent intelligently-written paper by DR. DAGGET, in the *Buffalo Medical and Surgical Journal*, refers to a valuable but much-neglected use of water. Irrigation of the urethra and bladder by posture and continuous current of hot water is presented as a means of curing urethral diseases, whose management has hitherto been a reproach to the profession. The fact that numberless and diverse formulæ for use in this malady burden our text-books and encumber our journals indicates that the profession is at sea, that our methods are uncertain, and that our treatment is empirical. The author justly condemns the crude mechanical methods which surgery has devised for the treatment of these common ailments, and especially condemns the too common practice of surgical interference during the existence of acute urethritis and its sequelæ. He advises as a good substitute for all other treatment the irrigation of the deep urethra with water sufficiently hot to cause smarting of the skin (how much more explicitly the requisite temperature could be expressed in degrees Fahrenheit!). Water of this temperature is borne with a feeling of relief and comfort. If the disease is confined to the anterior portion of the urethra, irrigation is to be executed in the upright position; if it involves the posterior portion, or deep urethra or bladder, irrigation should include these. For the latter purpose he has devised a position in which the patient's legs form a right angle with the thighs, and the latter form an acute angle with the body, which reclines upon a table,—upon the principle that nature's method of relaxing the parts involved is indicated by the squat and hump of animals in the act of evacuation. A steady in- and outflowing current of hot water, with the patient in this position, is a far more valuable measure in the treatment of stubborn cases of urethritis than the ordinary deep injection, which the author compares to treating laryngitis by rinsing the mouth.

Mechanical cleansing is now acknowledged as far superior, for purposes of asepsis and antisepsis, to the best chemical agents. Just as in periuterine congestions and inflammatory conditions the steady irrigation with hot water constringes the vessels and aids absorption of pathological products, so must a continuous irrigation of the bladder and urethra, properly ad-

ministered, produce a similar detergent effect upon parts which a brief injection with some strong medicament fails to affect. When we consider, for instance, the measure recommended by Guyon and others for treating chronic cystitis,—viz., the injection guttatim of a strong solution of nitrate of silver, which is expected to be more or less diluted by the urine present in the bladder, we must grant that this is an exceedingly irrational procedure when compared with the thorough cleansing of the inflamed surface by hot water.

We have the same effect from intestinal irrigation in subacute and chronic diarrhœas and dysenteries, which resist other treatment, but yield readily to thorough cleansing of the tract by plain water, made less irritating by being rendered slightly saline. The application of water in the cavities of the body presents an unlimited field, which it shall be our aim to cultivate and develop.

IS THE BATH TREATMENT OF INFECTIOUS DISEASES IN ACCORD WITH MODERN IDEAS?

In a leading article by SIMON BARUCH, in the June number of the *Journal of Balneology*, this question is considered. He thinks, very properly, that the acceptance of any method of treatment by the medical profession should be predicated upon its response to the accepted ideas of the day. That the hydriatic measures now in vogue among well-informed clinicians do meet the indications which are regarded to-day as demanding fulfilment, more fully than any other method, may be asserted without fear of contradiction.

In all infectious diseases the *materies morbi* has a definite mode of action,—an action, however, which is not always alike in all cases, and differs chiefly with the type of the disease in each individual.

Taking a severe case as an illustration, we find the system overwhelmed by the toxines due to the biochemic activity resulting from the life and death of the micro-organism to which the disease is traceable. Be that as it may, we do know clinically that we stand in the presence of an intense toxæmia which exercises a depressing, a devitalizing influence upon the nervous system. The latter is manifested by the depreciated condition of all the functions. The patient lies in a semi-stupor, his face is expressionless, the eyes dull and glassy, lids half closed (typhoid countenance). His perceptions are blunted, he mutters incoherently, picks at the bedclothes or into the air, he has no control over his sphincters. In brief, there exists great cerebral depression.

The pulse is rapid, feeble, dicrotic,—all manifestations of cardiac enfeeblement.

The respiration is shallow and ineffective; hypostatic conditions, bronchial congestions, and pneumonia result.

The temperature is elevated, either because of the loss of regulatory influence of the heat-centres or by diminution of heat-radiation from the skin, or both.

The secretions are diminished; the urine, for example, is concentrated, highly acid, and loaded with products of active tissue-change. These, together with the shallow respiration, are evidences of the crippled conditions of the emunctories, whose integrity is vitally important for the maintenance of health.

How does a hydriatic procedure adapted to the case remove these patent conditions which imperil life?

The patient is placed in a bath of 65° F.; frictions are used; his face and head are bathed in water at 50° F. The first effect is a refreshment, an enlivenment of the cerebrum. The eyes are opened, the face loses its apathetic stare; consciousness returns after one or more baths; the inspiration is deepened; expectoration is facilitated; the widening of the peripheral vessels and the stimulation of their coats relieve the heart; blood-pressure is increased, and the laboring organ becomes as quiet as does a sea-tossed ship in the hands of a skilled mariner.

Whether the temperature is reduced or not, the restoration, partial or complete, of the nerve-centres gives an impetus to the more efficient action of the organs depending upon it for innervation. These are palpable results.

Even the exacting demands of the most recent ideas are met by this treatment. Metschnikoff has shown by his interesting studies that our ideas on inflammation must submit to a revolution. Inflammation, he says, is no longer to be regarded as simply a condition of impaired cell-activity due to some irritation, but it is the "phagocytic reaction of the organism to an irritant." Cells are phagocytes, hungry to devour any toxine or microbe that may find entrance into the blood. We may successfully aid the system in this "reaction against toxines" by endowing its main vitalizing agent, the nerve-centres, with vigor, by furthering elimination from the skin and kidneys, by removing hyperæmia of the organs and facilitating the passage of phagocytes into the tissues; but more especially by rendering the blood more alkaline, and thus more favorable to the phagocytes.

All these are accomplished, according to well-established experiments, by the cold-bath treatment.

THE ACTION OF BICHLORIDE OF MERCURY ON THE BLOOD-CORPUSCLES.

The action of the bichloride of mercury upon the corpuscular elements of the blood has been the subject of an elaborate study by E. MAUREL (*Bull. Génér. de Thérapeutique*, March 15, 1893). The author has examined the question from toxicological, therapeutic, and pathological points of view. In the *first* instance he finds that,—

1. Bichloride of mercury, in high toxic amounts, exercises a noxious action on both the white and red corpuscles of the blood.

2. The drug in small amounts affects the white cells more markedly than it does the red bodies.

3. Finally, the minimum fatal quantities for the organism correspond to the smallest amounts necessary to destroy the leucocytes; the same relation exists in regard to the largest quantities tolerated by the economy and those which are borne by the leucocytes; and it can be said, therefore, that at present there is no histological element so susceptible to the influence of the drug in question as human leucocytes.

The results of previous studies lead the author to believe that the action of corrosive sublimate plays a more or less important *rôle* in poisoning by this agent.

Therapeutically, the observer has studied the action of mercuric chloride as an *alterative* and as an *antiseptic*. As an alterative (*a*) the drug, even in therapeutic amounts, exercises a certain action on the white blood-corpuscles. (*b*) When the substance is given by the stomach, this action manifests itself upon the leucocytes alone; but, on the contrary, when administered hypodermically and in the usual doses, the drug acts on both the white and the red corpuscles. These effects, in either case, may be explained largely by the alterative action of the agent. As an antiseptic, (*c*) the use of the bichloride of mercury, as such, is justified by its effects on certain pathogenic microbes. (*d*) This antiseptic action varies according to the nature of the germs; the mercuric salt is efficacious against *staphylococcus albus* only in the strength of 1 to 5000, while in the bacteria of carbuncle it acts well in solutions of the strength of 1 in 80,000. (*e*) Administered internally, the susceptibility of the white cells must be taken in consideration, and in such instances the drug should be employed against microbes that are more easily affected than human leucocytes. These latter, in man, begin to be acted upon by solutions of the strength of 1 in 60,000, the effects being quite pronounced under the action of solutions of the strength of 1 in 40,000. In man, the microbicidal properties of the bichloride of mercury, given internally, are to be utilized only when the pathogenic germs can be acted upon by weaker solutions than the ones just indicated. (*f*) It is probable that the leucocytes of different animals are differently acted upon by the drug. In order to employ the agent as an antiseptic in a certain species of animal, it must be ascertained first the degree of susceptibility of its leucocytes. (*g*) It must be borne in mind that to act as an antiseptic it is not necessary that the dose of the drug employed be able to kill the microbe; it is sufficient that such a dose enable the leucocytes to triumph over the germs in question. Often the same amount of the mercuric salt diminishes the power of both kinds of bodies; but it is important that the action exercised be such as to enable the leucocytes to conquer, as it were, the microbes. In the majority of cases antiseptics, internally administered, act only as adjuvants. (*h*) When hypodermic injections are used, the cells coming in direct contact with the solution are destroyed; but this action is merely local, and the organism is soon able to repair the loss. (*i*) The external use of the drug is attended with less danger, since the blood-cells are not acted upon until after the mercuric agent has been mixed up with the liquids of other tissues.

Pathologically, the action of the bichloride of mercury upon the corpuscular elements explains: 1. The depressant effects of the medicament upon the economy, effects which are followed by a condition of general anæmia. 2. In some cases the drug acts more powerfully upon the leucocytes than upon certain microbes, the reverse taking place, as has been shown, in other instances. The appearance of mercurial stomatitis can thus be explained. Again, in a third class of instances, the phenomenon may be explained by the fact that certain germs remain inactive while the corpuscular elements of the blood retain their normal powers; but as soon as such powers begin to fail, under this or that deleterious influence, then the latent germs are apt to become virulent.

Such in general are the conclusions drawn by the author from his remarkable study, and the results as a whole may be embodied in this statement: *The leucocytes play an important part regarding the action of the bichloride of mercury, first as a toxic agent, second as an antiseptic, and third as an alterative.*

THE ABANDONMENT OF IRIDECTOMY IN THE EXTRACTION OF HARD CATARACT.

This is the title of an address delivered by T. PRIDGIN TEALE before the Ophthalmological Society of the United Kingdom on June 9, 1893 (*Lancet*, June 17, 1893). He describes in detail his method of extracting a cataract through a shallow flap, as follows:

1. Antiseptics.—Carbolic acid still maintains its supremacy in his surgical work. The eyelids, eyelashes, conjunctiva, and conjunctival recesses are well cleansed with a solution of three minims to the ounce, a little more than one-half per cent., in which also all instruments, except the knife, are soaked.

2. Anæsthesia.—Cocaine is employed exclusively. For this purpose the drops to be used are specially prepared just before the operation. A small tube containing a grain of sterilized cocaine receives ten minims of distilled water, and this is instilled into the eye once or twice.

3. The Lid-holder.—This is a spring speculum of a pattern which was brought to him from the Continent about twenty years ago. It is large, strong, and well curved, and yet it allows ample room for the finger and thumb of an assistant to hold it firmly, and by means of it to control the eyelids and defend the globe from injurious pressure or spasm of the orbicularis. The spring speculum having been introduced, is put in charge of a competent assistant.

4. Fixation of the Eyeball.—The surgeon, by means of conjunctival forceps with broad teeth, takes hold boldly of the conjunctiva and subconjunctival tissue about three millimetres below the cornea, rolls the eye downward, and commences the incision.

5. The Knife.—His earlier shallow flap operations were made with the narrow Graefe's knife. This, in his hands, was not quite satisfactory, as he could not easily retain the aqueous humor up to the moment at which the knife-edge reached the posterior surface of the cornea, and so sometimes the iris was washed over the edge and wounded. He therefore fell back upon the long, narrow knife of Sichel, which, by its wedge shape, retains the aqueous up to the moment at which its edge is turned forward against the cornea. For the last three or four years he has used a still narrower form of Sichel's knife, suggested by and made for Mr. R. N. Hartley. This has proved to be admirable for the purpose, combining the wedge principle of Sichel with a close approximation to the narrow Graefe.

6. The Mode of Incision.—The point of the knife enters the cornea just within the outer margin at its equator, and emerges at a counter-puncture just within the inner margin of the cornea at a level about two millimetres above the equator. As soon as the counter-puncture is well accomplished, and the point of the cataract-knife has passed out of the cornea to the extent of about four millimetres, the next step is taken. This is the most critical part of the operation. The knife is somewhat rapidly and with a sort of knack turned directly forward, so that the blade, which, up to this point, has been parallel with the iris, comes to a right angle with the back of the cornea. The section is completed by cutting directly forward, this final cutting being vertically through the corneal thickness, absolutely linear, and in position about midway between the horizontal equator and the upper margin of the cornea. The knack of this part of the operation consists in so managing the knife that, as soon as it is turned from a plane parallel with the iris, in which by its wedge shape it retains the aqueous humor, to a plane vertical to the back of the cornea, which at once allows the aqueous to escape, the edge of the knife shall rapidly reach the posterior surface of the cornea and be in contact with it before the iris can fold over its edge. While this final part of the incision is being made, an assistant controls the eyelids by the speculum, holding them slightly off the eyeball so as to avert any sudden pressure on the globe during the completion of the incision. The incision thus made is practically a shallow flap, chiefly linear, with a small limb at an obtuse angle corresponding to the heel of the knife at the outer edge of the cornea, and a still smaller, hardly perceptible, limb corresponding to the point of the knife at the inner edge of the cornea. At the limbs the knife passes through the cornea obliquely, but in the horizontal linear part it cuts vertically through the corneal structure.

7. The Section.—He always makes the section in the upper half of the cornea, using the right hand for the right eye and the left hand for the left.

8. Extraction of the Cataract.—The operation is completed as follows: While the assistant continues to control the eyelids by the speculum, the operator, still keeping a grip of the conjunctiva below the cornea, so presses the holding forceps against the eyeball as to steady the lens towards the cornea while he ruptures the capsule with the cystotome. By this manœuvre he avoids the risk of damage to the suspensory ligament by pressure of the cystotome. After the rupture of the anterior cap-

sule the delivery of the lens is effected by the mutual manipulations of the two hands, the one maintaining the conjunctival hold with the forceps below, while the other exercises pressure above the cornea by the convex surface of the curette. By this means, and more especially by the pressure of the curette just above the cornea, the upper edge of the cataractous lens is made to present itself through the pupil and wound, and a very slow, gradual delivery can be accomplished by the combined or alternated pressure of forceps and curette. Great pains are taken to remove by the curette any remnants of the cortical portion of the lens, so as to completely cleanse the anterior chamber and the conjunctiva of all *débris*.

9. *Dressing of the Eye.*—The spring speculum is now removed. The eyelids and eyelashes are then smeared with vaseline, over which iodoform is dusted. A pad of absorbent cotton-wool, with an outer layer of black cotton-wool, is applied to each eye and made firm with strapping. He has for many years discarded every form of bandage, as having no advantage over adhesive strapping (except for men with very hairy faces), and as having the very serious disadvantage that if there be any swelling of the eyelids there is no yielding, and therefore a possibility of injurious pressure. If all goes on well, and if there is but little pain and little watering of the eye, so that the pad remains dry, he leaves the eye undisturbed and unlooked at until the eighth day, when he changes the pad of the eye that has been operated upon and removes the pad from the other.

The advantages of the incision above described are as follows: (*a*) In so far as it approaches the flap operation, it possesses with that operation the advantage of extrusion of the cataract without any cutting of the iris. In so far as it approaches the linear, it obviates to a great extent the disadvantages of the flap, which were the great liability to serious prolapse of the iris and to the displacement of the flap by the upper eyelid. (*b*) The position of the greater part of the incision across the middle and not at the base of the iris allows the lens more readily to present at the wound, as there is less of the body of the iris to be displaced. (*c*) The greater part of the wound being linear and vertical to the corneal thickness, as soon as the lens has escaped and all cortical matter has been removed the wound closes absolutely and the edges fit, leaving a level surface which permits early sealing of the aqueous chamber. (*d*) The greater part of the wound being away from the base of the iris and rather towards the pupil, there is a remarkable facility for the escape, or rather the extrusion, of cortical portions of the lens, the reason for which is discussed later. (*e*) The incision being entirely in the cornea and away from the ciliary region, there is probably much less risk of irido-cyclitis or of subsequent glaucoma.

TEARING (DISCISSION) OF OPAQUE AND CRUMPLED POSTERIOR CAPSULE, AND ITS RISKS.

There is, according to Landolt, great diversity of opinion as to the danger involved in needling the posterior capsule. Knapp and others consider it absolutely without danger if done with proper precautions, whereas a large number of operators only do it when compelled, because it is occasionally followed by irido-cyclitis or panophthalmitis. The question is of considerable importance and amounts to this: Are we, with those who fear bad results, to rest content with second-rate vision from an opaque capsule, or shall we, with Knapp, freely give such cases the chance of good vision, venturing a certain amount of risk? And what is the degree of risk? Judging from Mr. Teale's experience, the risk is small, as he has rarely had any trouble in consequence. A more important question is, What is the nature of the risk? This he believes to be in its beginning increased tension, which, unrelieved, may in some instances drift into irido-cyclitis or panophthalmitis. How are we to deal with this increasing tension? This is an interesting point, and one which, perhaps, is not so fully appreciated as it deserves to be. He illustrates it by two cases which recently happened in his practice. In both instances he tore with needles the opaque posterior capsule: the one after an extraction of traumatic cataract by suction, the other after an extraction of hard cataract by a shallow flap. Within forty-eight hours each patient suffered intense pain and dimness of vision from increased tension. On the third day in one case and on the fourth in the other he punctured with a broad needle through the upper part of the cornea and through the iris into the vitreous humor. The needle, turned sideways, allowed a few drops of vitreous humor to escape. In a quarter of an hour, in each case, intense agony was converted into perfect ease. There was no relapse of pain or of increased tension, and in a fortnight the subject of the extraction of hard cataract read J. 2. If unchecked, both cases would likely have ended in panophthalmitis. What he knows about the foregoing

method of dealing with such cases is this. In the year 1864, when in London, he told Sir William Bowman of a case of extraction by the semilunar flap which was causing anxiety, because, after discission of the capsule, it was falling off in condition on account of increased tension. He told him of the simple plan of puncture with a broad needle "through the iris into the vitreous humor." As soon as he returned home he acted upon this advice; normal tension was restored and vision was saved. He has now and then repeated the proceeding, though only rarely; but the two instances he has named occurred within the last six months.

He makes the following deductions from an analysis of his last hundred cases:

1. Anæsthetics.—Of the one hundred cases, the first four were under ether; all the rest were under cocaine.

2. Iridectomy.—In ten a preliminary iridectomy was performed, and in one an iridectomy at the time of operation, leaving eighty-nine operations without iridectomy. Of the ten cases of preliminary iridectomy, five were done in order to artificially ripen immature cataract. The other cases were as follows: 1, a feeble woman with diabetes; 2, a woman with only one eye; 3, a man, aged eighty-four, recently recovered from pneumonia; 4, an old man with subacute glaucoma; and, 5, a man in whom the lens had been forcibly dislocated by a quack, with consequent glaucoma.

3. Accidents at the Time of Operation.—Out of the eighty-nine shallow flap operations the vitreous was lost in three instances, in all of which there was a fluid vitreous, implying defective suspensory ligament. In two cases the iris was grazed by the knife. The remaining eighty-four are recorded as without accident,—*i.e.*, the operations were completed without a flaw. There is not a single record of dislocation of the vitreous from damage to the suspensory ligament during the operation.

4. Failures.—In the eighty-nine cases there were six failures. One occurred in the case of a drunkard; a second in a lady who had an outburst of hysterical weeping two days after the operation; in a third the iris was wounded; a fourth was in a man, aged eighty-four, whose other eye was also lost after an operation combined with iridectomy; and the fifth and sixth failed without obvious cause.

5. Subsequent Iridectomy and Artificial Pupil.—This is noted in eleven out of the eighty-nine.

In all these cases except two the resulting vision was good. Five read J. 1 easily; four are stated to have "good vision;" and two are recorded as "poor," reading only very large print, such as J. 18.

6. Prolapse of Iris.—It is difficult to be quite certain in what proportion of cases this occurred, and he does not feel sure that every instance has been recorded. Probably the cases in which subsequent iridectomy was required represent the more serious instances of prolapse, and there have been a few cases with a small adhesion of the iris to the corner of the incision without serious prolapse.

7. Glaucoma as a Sequel to Extraction.—He can only recall one case. This may be explained, perhaps, by the fact that where a large prolapse occurs the case usually demands a subsequent iridectomy. The slighter occasional adhesions to the scar do not appear to produce glaucoma or to be any material disadvantage, and are not to be looked upon as substantial objections to the shallow flap operation.

8. Needling.—Of the remaining seventy-two cases, tearing (discission) of opaque and crumpled capsule is noted in fourteen cases, which leaves fifty-eight free from any secondary operation. Needling has, therefore, been an exceptional operation. That this is not a general experience may be inferred from a review of the new edition of Mr. Berry's work in the *Lancet* of April 29, 1893. The reviewer says, "As a matter of fact the operation of needling is almost always required if the patient desires to read ordinary type. Even when the lens has slipped out without leaving more than a trace of cortical substance, the posterior capsule and membrane of the vitreous humor become wrinkled and seriously interfere with accurate vision of either near or distant objects." De Wecker, speaking of the iridectomy extraction, says, "In another class of cases the cortical masses left behind remain unabsorbed, and the capsule becomes opaque in a few days. Afterwards capsulotomy or iridotomy often gives excellent results." He considers "these complications to be less common after the simple extraction, and that when they do occur the secondary operations are more successful than when extraction with iridectomy has been performed." The final results of the fourteen cases in which needling of the capsule was required are that ten read J. 1, one read $\frac{20}{80}$, another $\frac{20}{100}$, another is stated to have "very good" vision, and in the last case vision is not recorded.

9. Retention of Cortical Masses.—This difficulty seems to him to have disappeared under the operation by the shallow flap, in which the incision is at a distance from the margin of the cornea, and there seems to be a reason for this.

Take an illustration from hypopyon. If we try to let out the pus from the anterior chamber by making an incision at the margin of the cornea, we find it very difficult to evacuate, partly, no doubt, from the iris presenting at and blocking the incision; but if we make an incision, especially a radial one, towards the centre of the cornea, the pus and *débris* escape at once. The emptying of the anterior chamber allows the iris and lens to advance towards the centre and to compress and empty the angle between the iris and cornea. So, in extraction of cataract by an incision away from the angle, the body of the vitreous presses forward towards the back of the iris and forces the cortical portions of the lens away from the angle behind the iris into the pupil and so towards the incision; hence the dealing with cortical portions of the lens ceases to be a practical difficulty under the operation by the shallow flap. Landolt and De Wecker both speak of retention of cortical masses as if such retention were not uncommon and as if the dealing with them were a serious practical difficulty.

10. Dislocation of the Vitreous Humor.—This is a point of considerable moment in extraction of cararact. It occurs in cases in which the vitreous humor is healthy, and is caused by straining of the ocular muscles during the operation, whereby the upper portion of the suspensory ligament is damaged so that the unprotected vitreous bulges against the back of the iris and forces the latter between the lips of the wound, interfering with proper fitting and making it gape. This, no doubt, is what Knapp, of New York, refers to when he advises an iridectomy "whenever there is a tendency to prolapse and it is difficult to replace the iris." Fuchs, of Vienna, made the same remark to Mr. H. Secker Walker, of Leeds, to whom Mr. Teale is indebted for extracts from foreign journals bearing upon the question of retention or abandonment of iridectomy. In his series of eighty-nine cases there is not one instance of damage to the suspensory ligament, or of a single case in which there was any difficulty in replacing the iris. He attributes this immunity in a great measure to the use of cocaine, which allows very free manipulation of the eye without producing muscular spasm, combined with the support given to the base of the iris and the suspensory ligament by the portion of the cornea between the incision and the angle of the anterior chamber. There are two periods when this accident may occur. One is at the completion of the incision. This may be guarded against by the care of the assistant in charge of the speculum, who, by judicious leverage of the thumb and finger, can control and hold the eyelids away from the globe. The other is when the surgeon is using the cystotome for rupturing the anterior capsule, and a certain amount of pressure is of necessity made upon the lens. This danger may be avoided by making the holding forceps which grasp the conjunctiva below the cornea so to press against the eyeball as to steady the lens towards the cornea and cystotome.

THE COMBINED METHOD OF CATARACT EXTRACTION.

MR. SWANZY'S paper on "The Combined Method of Cataract Extraction," presented to the Ophthalmological Society of the United Kingdom, June 8, 1893, is thus abstracted in the *Lancet*, June 17, 1893:

He advocated the combined in preference to the single method for the extraction of cataract, and reported on one hundred consecutive operations for uncomplicated senile cataract by the former method. The results obtained were: Ninety-five good, two medium, and three failures. The three failures were due to iritis. The accidents and irregularities which occurred during the operation were: Loss of vitreous in small quantity, twice; hemorrhage in the anterior chamber, such as to interfere with the normal progress of the operation, three times; section too short, four times; in two of these it was lengthened with scissors. Some cortical remains were left twenty-seven times, but in all except three they were insignificant in amount. Reflex vomiting during and after the operation was seen twice in different patients. No case of suppuration occurred, careful antiseptic measures being regularly employed. There were six cases of plastic iritis. Marked striped keratitis occurred six times, besides frequently in slighter degrees, but in no instance did it leave permanent damage behind it. The incision occupied the upper third or a little more of the corneal margin. A coloboma of about 3.5 millimetres was made, and great pains were taken to reduce each of the pillars into the anterior chamber completely. Such a coloboma was sufficient to obviate secondary iris prolapse by providing a way of exit for the aqueous behind the iris when the wound happened to be ruptured during the first few hours of the healing process. In this series incarceration of the iris occurred only once, and that was in one of the cases where reflex vomiting took place. As one of the

final steps of the operation, Mr. Swanzy laid much stress on search with forceps for any tag of capsule which might lie in that part of the wound which corresponded to the coloboma. If such a tag was captured, it was drawn out and snipped off, and thus prevented from becoming incarcerated in the wound during healing. In eighteen instances out of the one hundred capsule was found in the wound and abscised.

The PRESIDENT said that in extraction of cataract he much preferred the simple operation, and believed he obtained better results therefrom than by the combined method. He mentioned a case in which serious damage to the cornea followed the prolonged use of a strong solution of cocaine.

MR. CRITCHETT gave expression to his adherence to extraction by the combined method. He referred also to the danger to the cornea resulting from the too free use of cocaine. For some time he had been in the habit of anæsthetizing the iris with cocaine applied on the cystotome before doing iridectomy, and with very satisfactory results.

MR. DRAKE-BROCKMAN stated that he had abandoned iridectomy in cataract operations since 1878. He had performed four thousand extractions by the simple method since that date, with prolapse of the iris in about six per cent. He associated striped keratitis with the too free use of cocaine, but thought injurious results were less marked when the lids were closed.

MR. TWEEDY and MR. ADAMS FROST expressed themselves as being in favor of the combined operation.

MR. HILL GRIFFITH cited some of the results obtained at the Manchester Eye Infirmary, comprising over one thousand cases, by both procedures. The figures, so far as they would bear comparison, were slightly in favor of the simple operation.

MR. RICHARDSON CROSS thought it inexpedient to treat all cases indiscriminately by one method of operation. He thought the simple plan suitable for a large proportion of the straightforward cases and the combined method for others.

MR. SWANZY, in reply, said that an exact opinion ought to be based on a careful comparison of results, which was sometimes at variance with a general impression. He thought the objections to iridectomy arose from too free excision, which led to more frequent prolapse of the iris, and often to a coloboma so large as to be unsightly and disturbing to vision. These objections did not hold with a small iridectomy.

NOTES ON CATARACT EXTRACTION.

W. H. BATES (*Virginia Medical Monthly*, June, 1893) summarizes the results of his observations on cataract extraction from notes which he has taken during the past five years, as follows:

1. FAVORABLE CASES.

Cannot count fingers; whole lens opaque; no red reflex. Can count fingers; fundus indistinct. Sclerosed (sclerosed lens, the shadow by oblique illumination is on the same side as the light) lens cloudy; no clear spaces between striæ; color, white, yellow, red, black. Projection good; tension normal; the other eye healthy; absence of disease which is apt to be in the cataractous eye: myopia, retinitis, choroiditis, etc.

2. UNFAVORABLE CASES.

Immature cataract; clear spaces between striæ; front part of lens clear and can or *cannot* count fingers; wait, or do Förster or Pooley. Tension + or —. Opacity of cornea; post synechia; myopia; pterygium; conjunctivitis; blepharitis; dacryocystitis; nasal catarrh with and without discharge; disease in the other eye, which is apt to be in both; ill health; obesity. Hypermature cataract; small nucleus difficult to remove, and front part of the vitreous is usually fluid. Projection faulty or no perception of light; do not operate.

3. PREPARATION OF PATIENT.

Bowels moved the day before and the day of the operation; bath. Train the patient to obey orders; to look down, up, right, left, and not to squeeze the eye shut; very important. Patient should become accustomed to handling. Nervous patients: wait till nervousness passes off.

4. INSTRUMENTS.

Speculum not used if patient cannot be controlled; vitreous may be lost, etc. Manipulations can be made as easily as during the removal of a foreign body from the cornea. The operation without speculum or fixation forceps has advantages: Absence of nervous strain from the presence of the speculum and fixation forceps; patient is less apt to squeeze lids and lose vitreous; less local shock, and wound consequently heals better; speculum and fixation forceps irritate the eye; accidents fewer; less straining of the recti muscles, and the globe is not drawn backward into the orbit,—a cause of loss of vitreous, hemorrhage, etc.

Graefe Cataract-Knife. — Narrow, hollow ground. Back and edge should be straight,

or the aqueous escapes before the counter-puncture is made. Sharp on the point and the whole length of the edge; should be tested just before using by operator himself. A dull knife is often used and is a frequent cause of failure.

Speculum; Retractors; Strabismus-Hook.—Care not to press on the globe with instruments used to separate the lids during operation; if patient sneezes, lift the speculum from the globe, or the vitreous will be lost and the operation be a failure.

Fixation Forceps.—The teeth are sometimes imperfect and fail to grasp the conjunctiva.

Cystotome.—Sharp on the point and some distance from the point. A sharp cystotome is rare. (*a*) A dull cystotome causes a lacerated wound of the capsule, a wound that causes inflammation and opacity of the capsule; capsule opaque, poor vision. (*b*) A dull cystotome does not readily open the capsule, and efforts are often made to remove the lens when the capsule has not been sufficiently opened; capsule ruptured by pressure and vitreous lost, and poor vision obtained. (*c*) A dull cystotome may dislocate the lens during capsulotomy, and the subsequent removal of the lens be difficult.

5. Anæsthetic.

Cocaine, two per cent. to four per cent. Time used, ten minutes to sixty minutes +; the more nervous the patient, the greater the congestion of the eye, the longer is the time necessary to anæsthetize. With increased tension of the eyeball, as in glaucoma, a longer time is necessary. Cocaine acts better when the patient keeps the eyes shut and when used in both eyes. Anæsthesia when the pupil begins to dilate.

Objections to the Use of Cocaine.—Reduces intraocular tension; dries and hardens the cornea; predisposes to keratitis; predisposes to secondary hemorrhage, superficial and intraocular; use as little as is necessary.

Advantages of Cocaine.—Convenience; less apt to have loss of vitreous, prolapse of iris, and primary hemorrhage.

Ether or *chloroform* may be used when the eye is so congested that the cocaine will not produce anæsthesia and the patient is intractable.

Objections.—Vomiting afterwards may cause prolapse of the iris and even loss of vitreous; superficial *primary hemorrhage.*

6. Antisepsis.

Instruments, except the knife, should be kept in boiling water for one hour; all dipped in alcohol (ninety-five per cent.) just before using. Bichloride (1 to 3000) to skin of lids and to eyelashes; never inside the eye; has been followed by suppuration of the cornea. Mucus removed from the conjunctiva with warm boracic acid. Boiling water dulls the edge of sharp instruments; cleanliness is better than strong, irritating, antiseptic solutions.

7. Section.

Peripheral; above.

Corneal Section indicated.—Large cornea.

Advantages.—Less apt to have loss of vitreous or prolapse of the iris; absence of superficial hemorrhage.

Objections.—Removal of lens more difficult and section is bruised more.

Scleral Section indicated.—Small cornea, large lens, and in the operation with iridectomy.

Advantages.—Lens more readily removed; section is consequently less bruised; periphery of iris can be removed better.

Objections.—Loss of vitreous greater; superficial hemorrhage; prolapse of iris is more likely to occur.

Conjunctival Flap.—The section which includes considerable conjunctiva has less danger from secondary infection.

Size of Section.—Almost one-half of the corneal circumference; better too large than too small. If the section is too small, the removal of the lens is difficult and produces injurious traumatism to the whole eye; the removal of cortical matter is difficult. Section too small causes irido-cyclitis, suppuration of cornea, prolapse of iris, etc. Smooth section heals better. Bruised section causes secondary prolapse of the iris. Slanting section is made with the knife parallel to the plane of the iris.

Advantages.—Less apt to have loss of vitreous; healing better; with iridectomy, periphery of iris removed better.

Objections.—More difficult to remove the lens.

Steep section is made with the knife held more perpendicular to the cornea; has the advantage that the lens and cortex can be more easily removed.

Objections.—Wound gapes; loss of vitreous promoted.

A combination of the slanting and steep section is often made; the slanting section until just before withdrawal of the knife, when the section is finished with the knife cutting perpendicular to the cornea.

How to prevent Premature Escape of Aqueous.—In making the section always hold the

back of the knife gently *down* until the counter-puncture is made; the back of the knife should be straight. Avoid splitting the cornea; enter the anterior chamber with the knife held perpendicular to the cornea.

Measures to avoid cutting the Iris.—After the counter-puncture is made, while holding the heel of the knife stationary, cut rapidly upward with the point until the edge of the knife is beyond the margin of the pupil; then cut with the heel of the knife. If the iris falls over the edge of the knife, free it by turning the edge of the knife forward, and manipulate gently, trying to bring the point of the knife up first. No success; finish the section, and if the iris is very much bruised or cut, do an iridectomy.

Section gapes when tension of the eyeball is +; lens swollen: patient looks down.

When to stop and postpone the Operation.—Puncture wrong. Escape of aqueous as soon as puncture is made. Counter-puncture difficult; point of knife dulled by making puncture. Unruly patient, sneezing during operation; section left with a bridge; not completed at the top; wait till the patient is quieted, or use ether or chloroform to finish.

8. Iridectomy.

Operation without Iridectomy.—In selected cases results are better than where iridectomy is done. Large corneal section. More difficult to remove lens and *débris*. Pupil *not* dilated. Primary prolapse of the iris always occurs; may return spontaneously after closing the eye, or by warm or cool water syringed against the iris, or by use of the spatula.

Operation with Iridectomy.—Section more in sclera; small iridectomy better than large.

Indicated.—Cataract complicated with posterior synechia, myopia, choroiditis, etc.; tremulous iris; difficult expression of lens from rigid pupil or tough capsule; iris severely wounded during section; prolapsed iris not easily returned; lens dislocated before or during extraction (?); vitreous lost before lens removed; wound gapes, showing decided + tension; chronic glaucoma; best results obtained by doing iridectomy months or years before the extraction.

9. Förster's Operation for Ripening Cataract.

Small iridectomy above; scleral opening with lance-knife; massage of the lens with a blunt-pointed strabismus-hook, by rubbing over the cornea, pressing the cornea well against the lens.

Objections.—Vitreous more apt to be lost during extraction; scoop to extract lens oftener necessary; patient may lose self-control at the extraction; all have considerable cortex; tendency to iritis; results, vision not so good.

Förster not indicated.—Sclerosed lens; cataract in myopia; soft cataract.

Pooley's Operation for ripening Cataract without Iridectomy.—Pupil dilated with atropine; corneal section; results worse than Förster's. (Perfect results have been obtained ($\frac{20}{20}$) after the lens had been ripened by Förster's and Pooley's operation.)

10. Laceration of Capsule.

Can be done with knife before the counter-puncture is made; objectionable. Capsule tough; do iridectomy. Lens hard to express and vitreous may be lost; peripheral capsulotomy (H. Knapp).

Advantages.—Prevents prolapse of capsule; less plastic iritis.

Disadvantages.—Remnants of cataract shut up in capsule; secondary operations usually necessary; wrinkling of capsule may occur.

Free central laceration of capsule is followed by the best results.

Laceration of posterior capsule after lens is removed, to obviate secondary operations, is not always successful; danger, loss of vitreous.

If there is clear lens substance, puncture lens with cystotome, and rotate the lens cautiously on its antero-posterior diameter to separate the lens from the capsule.

Capsule is put on the stretch by slight pressure on the globe.

11. Removal of the Lens.

Difficult, when the cystotomy is not sufficient; *lens dislocated;* large lens; small lens; capsule tough; section too small; rigid pupil; posterior synechia; vitreous fluid; unruly patient.

By Pressure.—Pressure always gentle and continuous. Begin by pressure with spatula at lower border of cornea, pressing directly *backward* until the lens appears in the wound; then follow the lens out with gentle pressure of the spatula, passing upward over the cornea. Counter-pressure on sclera above the wound is a great help, but it is not usually necessary, and may cause loss of vitreous. If the upper border of the lens becomes lodged behind the section, apply pressure above the wound, to cause the lower border of the lens to rotate upward and be delivered first.

By Scoop Extraction.—Always employed when the vitreous is lost before the lens is removed. Always do an iridectomy first. Indicated also when the lens is dislocated consider-

ably; vitreous fluid (?); pressure extraction difficult (?).

12. Removal of Cortical Matter.

Advantages.—Lessens iritis; good vision obtained without secondary operations. Too prolonged efforts to clear the pupil may be followed by bad results, from loss of vitreous, severe iritis, suppuration of the wound, secondary prolapse of the iris.

Methods.—Massage of the cornea with the spatula, from periphery to the centre (from above as well as below, etc.), forces cortex into the pupil. Pressure backward on upper edge of the wound, section gapes and cortical matter flows out when aqueous is present. Close the eye and wait, which allows aqueous to reaccumulate, and massage again when necessary. Close the eye and rub the lids gently over the cornea with a rotatory movement; keep edge of lids away from the wound to prevent infection from eyelashes. Syringing against the wound with warm boracic-acid solution. Instruments in the anterior chamber to remove cortical matter are objectionable, although sometimes of advantage. Pupil black and patient counts fingers, cortical matter generally sufficiently removed.

13. Bandage and Dressing.

Bandage of white flannel or gauze, changed twice daily; bichloride (1 to 3000) dressing; cotton wet with solution. Indicated when patient is unruly and objects to dry dressing, and in chronic conjunctivitis, pterygium, dacryocystitis, to prevent infection.

Dr. Chisholm's Dressing.—Operated eye only closed with sticking-plaster; no dark room; patient not in bed. Has the advantage that healing takes place with slight conjunctivitis and photophobia. Bandage omitted when patient's restlessness is increased by wearing it, and ice-cloths used. Bandage causes conjunctivitis, and should be left off after wound is well closed. Too tight bandage keeps the wound open. Bandage especially indicated: prolapsed iris; reopening of wound; keratitis (?).

14. Accidents when Operating.

If the section is too small, enlarge with scissors. Avoid pricking skin of nose or lids with the point of the knife. If vitreous be lost before lens is removed, iridectomy and scoop extraction; if lost after lens is removed, close the eye at once and bandage; not necessary to cut it off.

Causes of Loss of Vitreous.—Straining of the patient; pressure too great in expelling the lens; tension +; dislocation of the lens. Prolapse of iris reduced spontaneously by massage, by syringing, by spatula. Not reduced, do iridectomy. Iris cut during section, iridectomy may be advisable. Prolapsed capsule difficult to recognize: appearance of gelatinous thread. Danger of infection occurs in extraction with or without iridectomy.

Hemorrhage.—Superficial hemorrhage is caused by wounding iris or conjunctiva. Sudden reduction of tension causes superficial and deep hemorrhage. Blood removed from anterior chamber by massage, irrigation, moist cotton against wound, by forceps. Slight superficial hemorrhage is not dangerous to the eye. Severe superficial hemorrhage is followed sometimes by suppuration of the cornea, by severe iritis, and by thickening of the capsule.

Deep Hemorrhage.—Preventive: large doses of bromide. Symptom preceding: deep-seated, severe pain. At once give hypodermic of morphine in the temple; vomiting and prolapse of iris may follow a few hours later. Deep hemorrhage may force out vitreous and retina; eyeball may be lost.

Collapse of the Cornea.—Causes: lack of tone in corneal tissue; patients debilitated. Loss of one-third or more of the vitreous may result in suppuration of the cornea.

Dislocation of the Lens during Extraction.—Caused often by a dull cystotome. Push lens back to pupil with cystotome when possible. Try very gentle pressure; if vitreous presents, do iridectomy and scoop extraction.

15. Accidents during Healing.

Iritis begins early, or after several days or a week. Pain present or *absent*. Use atropine as soon as the anterior chamber is re-established; hot water by the hour, cathartics, leeches, etc.

Secondary Prolapse of Iris.—Occurs at any time, even months after the operation. Pupil is always distorted or displaced in incarceration and in prolapse of the iris. Favored by iritis (swollen iris becomes adherent to the wound): tension of the globe +; tardy union of the wound; restless patient; *débris* in pupil, blood, cortex; swelling of cornea adjacent to wound; loss of vitreous, iris drawn up behind wound; manipulation of eye; bruising corneal section; straining at stool; debilitated patient, collapse of cornea; bandage too tight, wound opens. Prolapse of iris, after extraction without iridectomy, less dangerous than after extraction with iridectomy. Incarceration and prolapse of the

iris during healing has been reduced twenty-four hours after the extraction and a central circular pupil obtained (Hardy). Iridectomy does not prevent prolapse or incarceration of the iris. Iris in wound is always a channel for infection. Prolapse of the iris may be left alone when there are no symptoms.

Prolapse of Capsule.—Wound does not unite; always remove prolapsed capsule.

Suppuration of the Wound.—Very serious; occurs often *without* pain; occurs twelve hours after the operation, and later, even years after.

Causes.—Not always from outside infection: nasal catarrh, with and without discharge; chronic conjunctivitis; pterygium; prolapse of the iris; prolapse of the capsule; too strong bichloride eye-wash; infection from eyelashes; debility; alcoholism; restless patient; injury to the eye during sleep; vitreous in the wound; severe hemorrhage; collapse of the cornea; dacryocystitis; bad sanitary surroundings,—foul air.

Prophylaxis.—Treat catarrhal inflammations of eye, nose, and tear-passage. Care in cleansing the eye: do conjunctival flap section; wet dressing, bichloride cotton, changed often,—every two hours,—till wound closed. Pterygium removed before the extraction, or, if not, the section should be made outside the pterygium; bichloride dressing. Prolapsed iris: antiseptic dressing. Debility: quinine, milk-punches. Laxatives: fresh air, baths. Alcoholism: do not stop alcohol. Restless patient: do not confine in bed; may have to leave off bandage.

Treatment of suppuration of the cornea sometimes stops the disease and clears the cornea.

Local.—Hot water (110° to 115° F.) by douche to the cornea; very painful, very difficult to carry out, and usually must be done by a physician. Time: at least one hour four times a day. Hot bichloride, galvano-cautery, iodoform powder, atropine, pressure bandage, are much less efficient than the constant use of hot water day and night.

General Treatment.—Tonics, even to apparently robust patients; quinine, feeding, alcohol, etc. Cystoid cicatrix: pressure bandage; iodoform powder dusted on cicatrix.

Glaucoma; Iridectomy. — Panophthalmitis, caused by too early use of the eyes; caused by infection: enucleation after or before severe inflammation. Deep hemorrhage, when preceded by severe pain, may be prevented by hypodermic morphine in temple. Detachment of retina, also of choroid, is caused by too rapid operation and by loss of vitreous. Hyperæmia: rest in bed, hot water, bandage, atropine. Hypopyon: bandage, paracentesis. Hot water is often sufficient to relieve, but must be applied by douche. Opacity of cornea is caused by too strong cocaine, by strong bichloride, by keratitis. Reopening of the wound is caused by too tight bandage, movements of restless patient, feeble patient. Sympathetic ophthalmia; operated eye inflamed or painful for some time: enucleation. Insanity: some elderly patients become insane from the confinement in bed.

16. Treatment during Healing.

Ice is indicated when bandage cannot be worn; used as long as agreeable to the patient. Hot-water bathing benefits iritis and keratitis, and seems to clear the pupil. Atropine always used and as soon as the anterior chamber is re-established; its use continued until the eyeball is no longer red. Eserine, to prevent prolapse of the iris, is of doubtful value. Astringents for conjunctivitis. Leeches to relieve severe pain. Tonics and fresh air are generally useful. Stout patients need tonics. Full diet as soon as patient can take exercise.

17. Secondary Operations.

Needling may cause purulent iridophacitis, cyclitis; early before capsule is thickened; two needles to prevent traction; one may be pushed through the ciliary region behind the membrane. Iridotomy when the capsule is thickened or adherent to the iris. Keratome for incision through the cornea and capsule. De Wecker's scissors to divide capsule and iris; avoid rubbing the inner surface of the cornea with the scissors. Atropine before and after the operation. Iridectomy rarely does harm.

THE TREATMENT OF NEPHRITIS OF PREGNANCY.

Lancereaux (*Annales des Maladies des Organes Génito-Urinaires*, June, 1893), after discussing the etiology of the nephritis of pregnancy, which he attributes to the injurious influence upon the kidney epithelium of certain effete products which are eliminated by means of this organ, states that the patient should be submitted to an exclusive milk diet. If, in spite of this, the quantity of urine excreted remains small, appropriate remedies should be administered to favor diuresis. If this is unsuccessful, repeated purges are indicated, and when uræmic symptoms develop these must receive prompt and energetic treatment. Gastro-intestinal troubles should not be very vigorously combated, since otherwise

the uræmic poison may exert its injurious influence upon the nervous system. Narcotics should not be given. Indeed, it is often desirable to administer an emetic, even though the patient is complaining at the time of frequent vomiting. When the eclamptic seizure develops in the primipara in the sixth month of pregnancy, enemata of chloral followed the next day by purgative enema are indicated. The chloral should be used in doses of from 60 to 75 grains, and should be carried far up the bowel by means of a catheter to which a syringe is attached. Chloroform is also extremely useful; bleeding is only indicated when there is coma or signs of pulmonary congestion. As to the histological lesion, which consists of a fatty degeneration of the epithelial cells of the convoluted tubules, aside from the exclusive milk diet, there are no means of markedly influencing it. But this is of no particular significance, since, if urinary insufficiency is guarded against, convalescence is sure.

GUAIACOL IN THE TREATMENT OF BONE TUBERCULOSIS.

GRIFFITH (*American Surgery and Gynæcology*, vol. iii., No. 9) states that—

Guaiacol, where used locally or internally, is a powerful antiseptic in tuberculosis.

Tuberculous patients to whom guaiacol is given internally show marked increase in weight, strength, and appetite, if the use of the drug is continued long enough.

The exhibition of guaiacol in joint- or bone-tuberculosis should be continued through a long period of time.

Guaiacol, unlike its close relation, creosote, is non-irritating to the stomach, and is well borne for a long period.

Lastly, guaiacol is a great aid to the surgeon in the treatment of all forms of tuberculosis of joints or bone.

THE BEST DRESSING OF THE UMBILICAL CORD.

LVOW (*Revue Médico-Chirurgicale des Maladies des Femmes*, May 25, 1893), under the above title, holds that glycerin is the best dressing for the cord, because it is not only antiseptic, but also drying in its effect. He has used it in five hundred cases, and finds that it mummifies the cord and causes it to drop off in three to five days. The mode of procedure is as follows: After the cord has been ligated and cut, its visceral end is dried most carefully with absorbent cotton, and hermetically sealed by a thin layer of cotton moistened with pure glycerin. Over this are applied a few turns of a tarlatan bandage. This dressing is not changed until the cord comes away. During this period the child is not bathed; the cord is not even inspected, the external tarlatan bandage being changed only when it becomes soiled. The granulating surface left by the dropping off of the cord is perfectly healthy, non-inflammatory, and cicatrizes in from nine to ten days under a dressing of nitrate of bismuth or talc.

SUBCUTANEOUS INJECTIONS OF MERCURY IN THE TREATMENT OF SYPHILIS.

BALZER (*Journal de Médecine et de Chirurgie Pratiques*, June 10, 1893) states that subcutaneous injections of mercury are indicated in syphilis when it is necessary to act promptly and when the gastro-intestinal canal will not stand the ingestion of the drug by the mouth. Among the soluble salts, sublimate is the one commonly employed. The formula is as follows:

℞ Bichloride of mercury, 5 parts;
Chloride of sodium, 10 parts;
Distilled water, 2000 parts.

The chloride of sodium keeps the sublimate in solution, and renders the injection less painful. This injection is still better borne if .25 part of hydrochlorate of cocaine is added.

Cyanide of mercury is less painful than bichloride. The solution of this drug commonly employed is—

℞ Cyanide of mercury, 1 part;
Distilled water, 100 to 150 parts.

The inconvenience of this solution is that it rapidly undergoes decomposition. This holds true with the benzoate of mercury, which is a particularly valuable salt in hypodermic medication.

℞ Benzoate of mercury, 30 parts;
Chloride of sodium, 10 parts;
Cocaine, 150 parts;
Distilled water, 400 parts.

The technique of injection should be observed most scrupulously. The point of election is five fingers'-breadth behind the great trochanter. The solution should be driven into the muscle and not into the subcutaneous tissue. Pain is sometimes extremely severe, but abscesses are rare when the syringe is clean and the injection is driven in deep. The quantity to be employed varies according to the case. In general terms it is necessary to inject from 25 to 30 centigrammes of the sublimate

solution to cure an outbreak of syphilis. Consequently about thirty injections are required, since one centigramme is driven in each time. After thirty injections the treatment is continued by means of pills. This method requires daily injections, is only advised in cases of violent or sudden outbreak, and is especially serviceable in cerebral or ocular syphilis.

Injections of the insoluble preparations have the great advantages that but few injections are required and the intervals between these injections may be long.

The two insoluble salts which receive most favor are calomel and the yellow oxide of mercury. The latter, somewhat less painful than calomel, is perhaps the favorite.

The formula for the injection mixture is as follows:

℞ Calomel, 1.5 parts;
Olive oil, 15 parts.

Mercury is sometimes employed. A favorite formula is the following:

℞ Purified mercury, 20 parts;
Tincture of benzoin, 5 parts;
Liquid vaseline, 40 parts.

This is Neisser's formula, and it and similar preparations are termed gray oil.

The injection of insoluble preparations is less painful than the soluble salts. In making the injection the needle of the syringe must be perfectly dry. This needle, detached from the piston, is first driven in, then allowed to remain for a moment, while the surgeon looks for the escape of blood from its canal. This, of course, would indicate that the point of the needle had entered the calibre of a vessel, and that if the solution of mercury were driven in, it would be carried directly along the blood-channel and occasion pulmonary embolus, attended with serious, if not fatal, symptoms. It is advisable to wait for a full minute before attaching the syringe and driving in the injection. The insoluble proportion of mercury is reduced by the tissues and is absorbed. Suppuration is always produced at the seat of injection, but this is non-microbian in nature and is easily reabsorbed. The pain lasts for two or three days. When abscesses form they should not be opened hastily, in view of the fact that they undergo spontaneous resolution. The dose employed is from 5 to 7 centigrammes of mercury for each injection. The injections are repeated not more frequently than once in five days. After twenty to twenty-five centigrammes of mercury have been injected the treatment should be repeated at intervals of from ten to fifteen days. In general about thirty to forty centigrammes should be injected. Frequently a much smaller dose suffices; sometimes a single injection is sufficient to clear up all indications of syphilis. The dose mentioned should not be exceeded. If it seems advisable to give more mercury, this should be administered by the mouth or by means of inunctions. Before starting the course of injections the condition of the kidneys should always be examined into, for if there is albuminuria it is probable that there is such crippling of the kidneys that elimination of the mercury will take place in an imperfect way, and hence there is liability to such an accumulation of the drug in the system that toxic symptoms will be produced. Twenty-five to forty centigrammes of mercury should be administered in twenty to forty days. If sixty centigrammes are required, treatment should continue for two or three months.

PERMANENT CATHETERIZATION IN CASES OF URINARY INFECTION.

LEGUEU (*Annales des Maladies des Organes Génito-Urinaires*, No. 70, tome xi.) states that when the bladder is infected constitutional symptoms are dominated to a great extent by the condition of retention. Distention of this viscus also plays an important *rôle*, since it renders the vesical walls particularly liable to infection. In cases of stricture, or where there is prostatic obstruction, fever often never develops until there is vesical retention. In young subjects the muscular coat of the bladder still resists, and in spite of infection constitutional symptoms develop slowly, because vesical distention itself is slow in developing; but in advanced age, when the bladder-muscles are weakened, they readily yield when there is resistance to evacuation, and distention quickly takes place. When this phase is reached febrile attacks take place. As soon as the bladder ceases to evacuate its contents its muscular efforts must be supplemented by instrumental aid, usually by repeated catheterization. The urine can be drawn regularly and the fever disappears; but in certain cases, in spite of this treatment, fever persists, or is even exaggerated. Sometimes following each instrumentation there is distinct rise in temperature. Under such circumstances permanent catheterization is particularly indicated. Numberless cases attest the value of this procedure, and indeed the teachings of general surgery would lead to its adoption, since by this means a pus-containing cavity is emptied of its toxic contents. The action of a permanent catheter is not limited

to the bladder alone; it often produces a most beneficial effect upon the kidney, relieving congestion, with which that organ is affected in all cases of marked vesical distention. The polyuria and the digestive troubles from which those patients commonly suffer are also permanently ameliorated.

A case in point is quoted. A patient had gone into the hospital suffering from perineal abscess, due to extravasation and retention with overflow. The abscess was opened and the bladder was gradually emptied. The patient suffered from polyuria and high temperature. Internal urethrotomy was then practised, and a No. 17 catheter passed through the urethra into the bladder. The temperature dropped to normal and the polyuria disappeared. The advantages of a permanent catheter are that it allows of the evacuation and disinfection of the bladder, and is not accompanied by the traumatism so often encountered by repeated introduction. The objection urged against it is that it favors infection. This objection, however, is no longer tenable in the light of modern knowledge of antisepsis.

THE TREATMENT OF POST-PARTUM HEMORRHAGE.

HERMAN (*Revue Médico-Chirurgicale des Maladies des Femmes*, May 25, 1893) states that compression of the vessels is the most rational means of arresting post-partum hemorrhage. As preventive means the following considerations should be borne in mind: To render assistance if the uterus is inactive; to pay most minute attention to the details of the third portion of delivery. As treatment he advises massage of the uterus, with the hand placed upon the abdomen. If this is not successful, the introduction of the hand into the uterus to prove conclusively that it is perfectly empty. Finally, injections of hot water within the uterine cavity. If these means fail, persistent bimanual compression of the uterus should be made, assisted in its action by putting the infant to the breast. Injections of iron solution are dangerous, because they may cause death by distention of the uterus, peritonitis, or septicæmia. The introduction of iodoform gauze is not without its disadvantages; sometimes it is a means of allowing air to enter the veins, and it always prevents normal contraction of the uterus.

THE EMPLOYMENT OF CANELLA OR CINNAMOL.

Basing his experience upon the publication of Chamberland, CHAMPIONNIERE (*Journal de Médecine et de Chirurgie Pratiques*, June 10, 1893) states that the former showed that many essences are strong antiseptics joined to a direct and immediate action, and even more valuable remote effect, perhaps due to the tension of the vapor, and experimented at length with the essence of canella, since this had been proved to have the most powerful antiseptic effect. As an excipient in itself antiseptic and non-irritant, retinol was found to serve admirably. This completely dissolves the essence and allows of the use of strong solutions. The essence of canella as found in commerce is altered by the light and by contact with air. When double distilled, and kept from air and light, it is much more powerful as an antiseptic lotion. Thus purified it has been named cinnamol by André to distinguish it from the preparation of commerce. In addition to the cinnamol, another antiseptic has been added, which is more fixed and permanent, but is yet non-irritant; this is naphthol. The preparation now made and employed by Championniere is as follows:

℞ Retinol, 75 grammes;
Sterilized wax, 25 grammes;
Essence of canella, 1 gramme;
Beta-naphthol, 1 gramme.

A piece of lint is spread with this pomade and applied directly to the wound. Championniere has thus dressed a series of laparotomies, wounds with drainage and without, such as radical operation for hernia and wounds of the breast, etc. All of the wounds remained antiseptic. When drainage was employed the track of the tube remained sterile. The dressing is kept in place for ten to eleven days. When applied to affected surfaces it rapidly diminishes suppuration and exerts a happy effect upon the inflammation.

QUENUE'S OPERATION FOR HEMORRHOIDS.

QUENUE'S operation for hemorrhoids, published in the *Revue de Thérapeutique Médico-Chirurgicale*, June 15, 1893, is practically a modification of Whitehead's operation. He holds that this latter procedure is open to the objection that the coaptation of raw surfaces is difficult; that if the patient has a movement of the bowels before six or seven days there is a chance that the operation will fail, and that if union is not complete at one point there results a cicatrix which readily ulcerates. What he terms a simplification of the Whitehead operation is as follows: An incision is made at the union of the skin and

mucous membrane, or a little beyond this. This incision goes half around the anus, and the mucous membrane is dissected up with the hemorrhoids which adhere to it. The section is carried up until sound mucous membrane is reached. This is determined by the rosy color of the latter. In place of excising the mucous membrane, the varicose veins are cut from it by means of small curved scissors. This procedure is facilitated by introducing a finger within the gut, then with the scissors the veins are cut away from the raw surface, leaving only a very thin layer of mucous membrane, which is entirely deprived of its cellulo-vascular coat. Hæmostasis is secured by ligatures or forceps, and the wound is sutured. The same procedure is then carried out on the opposite side of the bowel. Some iodoform cotton is introduced into the rectum for the purpose of exerting moderate compression upon the two mucous flaps, thus keeping them in close contact with the subjacent tissues. The sutures are removed the fifth or sixth day. Even if there is a fæcal evacuation before this, the line of suture is not interfered with, since it is placed without the anus and can be readily protected by the dressing. If the hemorrhoids are external they are incised; at the same time clots are turned out and the surface of the open veins is rubbed with a tampon soaked in sublimate. The incision is then sutured, and union takes place by first intention. Quenue claims for his operation the advantages that the mucous membrane is left entire, that there is no retraction, there is not such tension that the sutures cut through the raw surface, the mucous membranes unite quickly to the surrounding tissues, and a proper antiseptic dressing is readily kept in place.

ANTERIOR ABDOMINAL HYSTEROPEXY FOR PROLAPSE OF THE UTERUS.

THER-MIKAELIANTSE (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) favors suturing the anterior abdominal wall to the posterior wall of the uterus for the relief of prolapse. The reason for this is, there is some likelihood of having a subsequent hernia form. The intrauterine pressure is not exerted upon the utero-sacral ligaments, and allows them to regain their normal function.

REPORT OF FIVE CASES OF ALEXANDER'S OPERATION.

CUGIANI (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) reports that in one of his cases it was impossible to find the round ligament on either side. The remaining four cases resulted in perfect cures, the pain and metrorrhagia disappearing; some nervous troubles, however, persisted. Alexander's operation can be done with the best of results in cases of retroflexion, retroversion, and prolapse, hysteropexy being indicated only in cases of very marked prolapse.

EXTRAPERITONEAL HYSTEROPEXY FOR THE TREATMENT OF DEVIATIONS OF THE UTERUS.

CRESPI (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) says the uterus is generally found against the abdominal wall. In one case he incised the abdomen down to the peritoneum, around the uterus, made it fast with sutures, and closed the abdominal wound. The author reports four successful cases.

THE RECIPROCAL EFFECTS OF PREGNANCY AND CHILDBIRTH ON THE OPERATION FOR SHORTENING THE BROAD LIGAMENT.

ALEXANDER (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) says that many have accused the operation of Alexander of provoking abortions. In reality the author states that the shortened round ligaments do not entirely support the uterus, but they maintain it in a normal position. Enlargement of the uterus during pregnancy does not produce lengthening of the round ligaments, but simply dilatation at the point of ligamentous attachment. Any lengthening that might take place is corrected during the post-puerperal period. The author reports seven cases operated upon by himself, all having become pregnant; the uterus did not return to the position for the relief of which the operation was required.

THE TREATMENT OF ECLAMPSIA.

CHARPENTIER (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893), in an elaborate report on the treatment of eclampsia, makes the following statements:

All women suffering from albuminuria are liable to eclampsia, and should be placed immediately on a milk diet, which is by far the best preventive. At all times during the convulsions the women become very much cyanosed, and from four to five hundred grammes of blood should be drawn, followed by the administration of chloral.

Allow labor to take place spontaneously, but at the same time hasten it as much as possible.

Sometimes the contractions of the uterus towards the close of labor become very feeble. In this case it is necessary to apply the forceps or perform version if the infant be alive, and to use the cephalotribe if it be dead.

Reserve the induction of labor for those cases where medical treatment has not completely relieved the aura.

Reject absolutely Cæsarean section and forced labor; deep incisions into the neck of the uterus and bleeding are preferable.

Gueniot claims that there are three forms of eclampsia:

1. Hypertoxic.
2. Neurasthenic.
3. The common form.

Against the toxæmia there is little to be done.

For the reflex excitability chloroform inhalation is the best treatment.

In certain very grave cases it is necessary to use chloral alone. Tarnier says the prognosis is always extremely grave and the mortality is about twenty-five per cent.

THE TREATMENT OF GLANDULAR ENDOMETRITIS OF THE CERVIX.

HARTMAN (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) says this form of endometritis is very common in young girls, and is characterized by a discharge of white or light-green, thick, tenacious fluid. The presence of the gonococcus has been noted in a number of cases. It obstinately resists curetting, but has been ameliorated by such treatment, and indeed sometimes cured.

Doleris recommends scarification of the mucous membrane, which will allow the penetration of medicinal agents; while Bouilly suggests ablation of the mucous membrane of the diseased area.

After the mucous membrane has been removed, the cervix should be freely painted with a mixture of glycerin and creosote (1 to 3), and the cervix and vagina packed with iodoform gauze. The dressing should be removed in forty-eight hours, and a fresh piece of gauze, wet with glycerin creosote, should be inserted within the cervix. There is occasionally serious hemorrhage during this operation, which requires a tampon for its relief. If the disease returns, the cervix should be amputated, as recommended by Schroeder.

OVARIOTOMY IN INFANTS.

ALDIBERT (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) says the first ovariotomies performed during infancy were reported by Jouon and Bryant. Schwartz has collected five cases.

Hennig reports twelve cases, nine of which were between twelve and fifteen years of age, with six recoveries; three cases, aged between three and eight, with two recoveries.

Most of the operations were for ovarian cysts, while others were for tumors of the ovary proper.

CALOMEL SOAP IN THE TREATMENT OF SYPHILIS.

WATRASZEWSKI (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) describes the preparation of the soap as follows: The calomel, in the form of vapor, is mixed with a potash soap, in strengths of 1 to 2 and 1 to 3. It forms a soft mass of a white color.

From two to three grammes of the soap should be rubbed in every day.

The inunctions should be carried out in the following manner: The parts to be rubbed should first be washed with ordinary soap and water, and the patient then having taken a bath, the soap should be applied and rubbed in with a rotatory motion of the hand for from ten to fifteen minutes.

The advantages claimed for this method of treatment are as follows:

1. Its application takes but little time.
2. The soap is odorless and colorless, and it does not soil the linen.
3. The inunctions never irritate the skin, except when applied too often in the same region.

The rapidity of cure corresponds in time to that resulting from the use of blue ointment.

THE MICRO-ORGANISM OF SOFT CHANCRE.

KREFTING (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) reports, as a result of his experiments, that in the pustules produced by inoculation there is found an organism similar in every way to that described by Ducrey. All attempts at culture have given negative results. Examination of the edges of the excised sore has also given negative results.

Jullien reports the same experience, and was able to reproduce the sore by inoculation through three generations.

Unna employs a special mixture of glycerin

and ether for coloring, and has found an organism in five instances similar to the streptobacillus of chancroid.

The organisms during their growth form long chains in the tissues, and they are almost always found in the lymphatics and between the cells.

The author has also found this bacillus in the virulent bubo that had opened itself under a bandage.

All attempts to cultivate on artificial media have proven failures.

The organisms exist in many of the pustules in a pure state. The different methods employed to show the organisms are in themselves very unsatisfactory.

As a stain, that suggested by Unna is probably the best. A mixture of oil of aniline and xylol will decolorize satisfactorily. Alcohol cannot be used, as it removes the stain from the organisms.

The organisms are generally found in great numbers.

These researches indicate the need of antiseptic treatment in all cases of chancroid. Among the best modern treatments are spraying with carbolic lotion (1 to 40), applications of chloral (1 to 10), or campho-phenique full strength, and particularly cleansing and sterilizing by sprays of peroxide.

THE TREATMENT OF FRECKLES.

VAN HOORN (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) describes his method of treating freckles by flaying. The same method may be employed for the relief of cicatrices, acne rosacea, and other lesions which deform the face. The superficial layer of the skin of the entire face can be removed in one piece.

Several times daily the skin of the diseased part is rubbed with the following ointment:

℞ Resorcin, 40 grammes;
Oxide of zinc, 10 grammes;
Silica, pure and anhydrous, 2 grammes;
Lard, 20 grammes;
Olive oil, 8 grammes.

In the course of three or four days the skin becomes parchment-like and cracks. The moment that this condition appears the following solution should be applied:

℞ Purified gelatin (white), 4 grammes;
Oxide of zinc, 3 grammes;
Glycerin, thirty per cent., pure, 5 grammes;
Water, 8 grammes.

Afterwards the part should be covered with wadding to prevent sticking.

In the course of a few days the old epidermis can be easily detached with the dressing.

According to Fournier the method is very painful.

THE TREATMENT OF ALOPECIA WITH ESSENCE OF WINTERGREEN.

HALLOPEAU (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) has made some experiments as regards the value of the essence of wintergreen in the treatment of alopecia. In one case six patches were found on one side of the head, which had been treated with tincture of cinnamon and had not improved.

After one month three of these were treated with essence of wintergreen, while the remaining three were treated daily with frictions with the essence of cinnamon with four parts of ether.

As a result of this observation the patches treated with the wintergreen healed immediately, while those treated with the cinnamon showed no signs of improving.

In applying the wintergreen it may be mixed with an equal part of ether, or one part of vaseline to five of the essence.

The ethereal solution is very active and is rather to be preferred.

When used it is to be thoroughly rubbed in the diseased part and applied once daily.

Its beneficial effects result from its producing an inflammation of the integument and transforming it into an unfavorable medium for the growth of parasites.

The application is not painful.

THE PREVENTIVE TREATMENT OF SYPHILIS.

NEUMANN (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) reports the case of a man that had submitted to the preventive treatment of syphilis.

The chancre was excised and forty inunctions of Zittman's decoction given. Four months later a macular syphilide of peculiar form developed. The lesions were found on the chest and forearms, and were about the size of a silver dollar.

The patient was much emaciated; iritis and periostitis of both tibiæ were present.

Another case was treated in a similar way, and the same variety of eruption developed nine weeks later. Three years later the patient had several gummata on the posterior wall of

the pharynx. In both cases from twenty-five to forty-one inunctions were given with a course of iodide of potassium; they have since remained entirely free from any other manifestations of the disease.

THE VALUE OF WELANDER'S ABORTIVE TREATMENT OF BUBOES.

BROUSSE and BOTHEZAT (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) state that Welander, assuming that buboes were the result of the presence of micro-organisms in the tissues, adopted the plan of injecting subcutaneously into the gland and periglandular tissue benzoate of mercury.

Benzoate of mercury, 1 gramme;
Sodium chloride, .30 gramme;
Water, 100 grammes.

One cubic centimetre of the above solution to be injected into the inflamed glands and a compress applied. The injections were followed by some swelling, but resorption took place in about three weeks. If the bubo is virulent the benzoate injection will not prevent its going on to suppuration.

If fluctuation be pronounced, the skin red and thinned, the injection is not altogether useless, as it will hasten the absorption of the infiltrate. In general, about fifty per cent. of the cases will require incision.

If fluctuation be marked, but the skin still remains thick and healthy, a solution of the benzoate should be injected. The abscess will generally undergo resolution without the necessity of an incision.

Loetnik has used Welander's method, and reports good results in eighty-seven per cent. of cases.

Generally a single injection suffices, but in some few cases as many as twelve have been made in eight days. In making the injections the skin should be rendered thoroughly antiseptic, and where the inflamed gland can be made out a half injection should be made at each pole of the gland. The parts should then be covered with a sublimate compress, and regular and even compress made with a rubber band.

Of ten cases treated by the author only one was successful, the remaining cases going on to suppuration and requiring incision.

The injections are followed by malaise, headache, nausea, and fever.

In conclusion, the author states that the injections are not of as much value as stated by Welander and Loetnik; and they are not without some danger, as there is often excessive inflammatory reaction.

THE COLLODION IODIDE IN THE TREATMENT OF SEBORRHŒA OF THE SCALP.

BUTTE (*Annales de Dermatologie et de Syphiligraphie*, vol. iv., 1893) has employed the collodion iodide for tinea of the scalp during the past four years with the best of results. In the achromate form of alopecia it is of great value, while in the decalvante form it is not better than the ordinary methods of treatment.

It is in ordinary tinea that the best results are obtained. It has, however, not been employed to the exclusion of other remedies.

The technique of the treatment is as follows:

In all those cases in which epilation is thought necessary, the following is painted on all the patches with a piece of lint:

℞ Alcohol, ninety-five per cent., 12 grammes;
Metallic iodine, .75 gramme.
Allow to dissolve, and add to the same
Collodion, 35 grammes;
Venice turpentine, 1.5 grammes;
Castor oil, 2 grammes.

The following formula may also be employed:

℞ Alcohol, ninety-five per cent.,
Ether, of each, 5 grammes;
Metallic iodine, .50 gramme;
Collodion, 30 grammes.

Three or four days after the first application the mixture may be applied daily until the collodion becomes very thick, well adherent, and does not crack.

About the fifteenth day the edges of the collodion are separated and cut into sections with the scissors, and each section is torn off violently with the fingers. The part uncovered is washed with a solution of corrosive sublimate (1 to 500). Daily, or twice daily, applications of this parasiticide are to be made.

THE TREATMENT OF UTERINE FIBROMATA WITH CHLORIDE OF ZINC.

CONDAMIN (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) is in the habit of using crayons of chloride of zinc in the treatment of those cases of uterine fibromata where the patients are too weak to stand operative interference.

After the cervix is dilated and the cavity of the uterus thoroughly disinfected, a crayon of chloride of zinc is introduced. The cervix is

then tamponed, and the woman placed in bed, resting on her abdomen for several hours. On about the eighth or tenth day the slough separates. A second crayon should then be introduced in the same manner. There is but little constitutional reaction after these applications.

THE ELECTRICAL TREATMENT OF UTERINE FIBROMATA.

BERGONIE and BOURSIER (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) report the results of their observations on the electrical treatment of two hundred cases of uterine fibromata, the analysis of only one hundred being considered.

The technique is as follows: The positive electrode is introduced into the uterus and the large abdominal electrode is connected with the negative pole.

A current of from twenty-five to one hundred and fifty milliampères is used for about ten minutes. The intrauterine electrode should be rendered thoroughly antiseptic with bichloride solution.

In fifty-four of the two hundred cases considered the fibromata were very large. Seven of these showed considerable atrophy to have taken place.

Ninety cases suffered greatly from hemorrhage; in eighty-one this symptom entirely disappeared.

Forty-one of the cases had great pain; twenty-two of these were relieved.

In sixty-three, where the general condition of the patient was seriously compromised, there was marked improvement in health.

THE SUPERIORITY OF A LAPAROTOMY OVER VAGINAL HYSTERECTOMY IN CASES OF PELVIC SUPPURATION.

DELAGENIERE (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) says that laparotomy is superior to vaginal hysterectomy in cases of pelvic suppuration, because—

1. Laparotomy is not so grave an operation as hysterectomy.

2. The final results are as good in laparotomy as in hysterectomy.

3. The inconvenience of the abdominal cicatrice is much less important than the dangers of opening the bladder in hysterectomy.

In simple cases of pyosalpingitis the results are most excellent after laparotomy.

For the very complicated cases the hysterectomy is more suitable.

REPORT OF TWENTY CASES OF SYMPHYSEOTOMY.

PINARD (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) reports twenty cases of symphyseotomy, with one death on the ninth day; child living.

A woman, aged thirty-one, pregnant for the fifth time, and the first four labors all terminated in the following manner:

The first labor terminated spontaneously, the child living. The second required the forceps, the child dead. The third and fourth labors terminated spontaneously, the children living. The fifth pregnancy progressed naturally to full term.

When she applied to the hospital for delivery, an examination showed that there was considerable contraction of the pelvis.

The occiput was inclined to rotate posteriorly.

The symphysis was divided in the usual manner, and the child rapidly delivered with the forceps.

The separation of the divided symphysis varied between 4.5 and 5.5 centimetres. The wound was dressed, and the uterine cavity washed out with a five-per-cent. carbolic solution.

On the following morning patient had a chill, and on examination of the genitals a liquid with a horrible odor was found escaping. The vagina was irrigated once more and tamponed with iodoform gauze.

The following day the lochia were still very fetid and the patient had high fever. An intrauterine injection of carbolized glycerin (five per cent.) was given and a fresh gauze tampon introduced.

The wound of the symphysis was examined, but nothing abnormal could be found.

On the following day, although the patient's general condition had somewhat improved, spasmodic contraction of some of the face muscles was noticed.

The patient complained as if something cracked in the old symphyseal wound. On examination it was found that the scar had opened for a few millimetres and was discharging a bloody, putrid pus.

A small drainage-tube was introduced and the wound carefully disinfected.

The temperature soon became very high, the patient delirious, and died the following day.

At the autopsy the edges of the abdominal wound were found everted. The pubic bones were found separated and connected with a large retro-pubic pocket.

There was no peritonitis, and the tubes and ovaries were healthy.

The retro-pubic pocket connected with two long lateral pockets filled with putrid pus.

Diagnosis of septicæmia was made as cause of death.

THE CURATIVE EFFECT OF LAPAROTOMY IN TUBERCULOSIS OF THE PERITONEUM.

BUMM (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893) reports the case of a woman, aged forty, no hereditary taints, suffering from peritoneal tuberculosis. Laparotomy was performed, and three quarts of fluid were drawn off. The peritoneum was covered with small and large white nodules. Some of these were cut away with scissors and others were removed with the sponge; iodoform was freely used, the abdomen was closed and surrounded with a binder. An examination of the nodules removed showed the typical appearances of young tubercle. Researches as to the presence of the tubercle bacilli were absolutely negative.

The patient was examined at the end of eight weeks, and a superficial tuberculosis found about one of the sutures. A sinus led to a collection of pus in the abdominal wall. In this abscess the bacilli were found in great numbers.

An injection of tuberculin was given, and was followed by high fever for four days. After the decline of the fever the encysted exudate was removed. The walls of the cavity were covered with white nodules. The patient finally recovered, and has remained free from any recurrence for a year and a half. The author suggests as a possible explanation of the influence of operation on the cure of these cases, that it causes an inflammatory exudate of round cells and a final transformation of the nodules into cicatricial tissue.

Fritsch claims that the cure is nothing more than the restoration of the normal circulation and consequent absorption.

HERZFELD'S TECHNIQUE FOR TOTAL EXTIRPATION OF THE UTERUS.

CABOCHE (*Annales de Gynécologie et d' Obstétrique*, vol. xxxix., 1893), for this operation, places the patient on the left side, and a curved incision, convexity towards the left, is made, commencing at the posterior inferior iliac spine and running over to the middle of the sacral crest, then down the median line of that bone to within one centimetre of the verge of the anus. The incision should include all the soft parts and expose the coccyx and the last two sacral vertebræ. The coccyx is removed, the sacral insertion of the two sciatic ligaments is next divided, and the resected inferior extremity of the sacrum is drawn out. The prevertebral fascia which presents is incised, and any small arteries that have been divided should be tied.

The right border of the rectum is then seen in the inferior portion of the wound and to the left side.

The advantage of this last manœuvre is that the vagina is easily found, the superior part of which is found deviating to the right, and is distinguished from the rectum by its brilliant white color.

The vagina is now separated from the rectum, and the finger should be introduced into the vagina to find the position of the cul-de-sac.

That part of the peritoneum that forms the pouch of Douglas is divided between forceps; the incision should be made to the right and not to the left, because of the rectum.

The finger is then introduced into the abdominal cavity, and the fundus with the adnexa brought into the wound.

Ligatures are passed through the broad ligaments on either side with a Deschamp's needle, and the separation of the uterus completed with a bistoury.

This being done, the peritoneum on the anterior surface of the uterus is incised, corresponding to the line of insertion of the peritoneum at this level.

The anterior part of the uterus is separated from the bladder. The uterine vessels are ligated high up before they bifurcate, which procedure renders the section of the vagina entirely bloodless.

The uterus now being removed, the vagina is closed by a Lembert suture.

The bone and soft parts are replaced and the funnel-shaped wound packed with iodoform gauze.

The author states that the vaginal method of total extirpation should be used in those cases where the uterus is not too large and the adnexa are perfectly movable.

THE TRANSPLANTATION OF LARGE FLAPS OF SKIN.

KRAUS (*Archiv für Klinische Chirurgie*, vol. xlvi.) says, in former times, when, after extensive injuries to the limbs, considerable skin was lost, in order to cover this defect it was necessary to

employ the methods of Mass and Wagner,—that is, it was necessary to take large skin-flaps with a pedicle from the rump for the arm, and for the leg and foot from the other leg.

Thiersch's grafts have never proved very satisfactory for large defects of the skin-surface.

In later years the author has been in the habit of making flaps from the entire thickness of the cutis and without a pedicle. With the proper amount of care the divided skin-flap will almost always unite.

The author has experimented upon twenty-one cases and has made over one hundred skin-flaps.

It makes but little difference as regards the size of the flap. Spindle-shaped flaps from twenty to twenty-five centimetres long and six or eight wide can be removed.

In employing these flaps it is necessary that they be thoroughly antiseptic, and all bleeding should be controlled by compression.

The foundation for the flaps must either be a fresh wound or, at least, one made so.

In granulating wounds the granulations should be removed with the sharp spoon. If corrosive sublimate solution has been used as an antiseptic, it must be entirely removed with sterilized salt solution, and the wound surface dried with sterilized gauze. The instruments and hands must also be dry.

It is much better in some granulating wounds to remove the granulations with the sharp knife, because if they have been of long standing the tissues are infiltrated and hard. If there be thickened bone under an ulcer it should be chiselled away.

That part of the body from which the skin-flap is to be removed should be thoroughly disinfected, but this should not be done too energetically. The sublimate should be removed with sterilized salt solution and the skin carefully dried.

If the flap is to be taken from the arm, the anterior and inner surface should be selected.

For the anterior surface of the thigh the flap should be taken from the rump.

The flaps should all be more or less spindle-shaped, as it permits of the wound made by their removal being easily sutured.

The cutis is quickly dissected from the subcutaneous fat, the knife always being made to cut at right angles to the flap.

The flap, once removed, is placed on the wound surface and quickly sutured in position.

The wound should be carefully covered with a light sterilized five-per-cent. iodoform mull and fastened with a light compress. Where possible, the part should be kept quiet by means of a splint.

The dressing should be changed in three or four days, because of the blebs which are occasionally found in the flap. All these should be opened.

To avoid making tension on the flap, only the superficial layers of the dressing should be removed first; then the entire limb should be placed in a warm boracic-acid bath, when the rest of the dressing can be easily removed. In applying the second dressing the mull should be thickly covered with boracic vaseline.

On the fourth day the flap looks pale or blue red and livid. On the seventh or eighth day the color is rose red, and on the fourteenth day this color is somewhat intensified.

Of the one hundred flaps made by the author only four became gangrenous.

In general from three to six weeks are required for the complete union of the flap; the sensibility returns very slowly.

PLASTIC OPERATIONS ON THE STUMP AFTER AMPUTATION OF THE LEG.

BLER (*Archiv für Klinische Chirurgie*, vol. xlvi.) has devised an operation for amputation of the leg that will enable the patient to bear his weight on the end of the stump.

After amputating the limb a wedge-shaped incision is made posteriorly and somewhat above the line of amputation.

The point of the wedge is removed, and when the ends of the bones are brought together the stump stands at right angles to the rest of the leg, and forms a kind of foot, upon which the patient can bear his weight.

After the bones and skin have been sutured together the stump is put in a Cramer's wire splint, which can be moulded to fit the limb.

Three successful cases are reported.

Reviews.

NOTES ON THE NEWER REMEDIES, THEIR THERAPEUTIC APPLICATIONS AND MODES OF ADMINISTRATION. By David Cerna, M.D., Ph.D.
Philadelphia: W. B. Saunders.

The pages of this little book, as is indicated by the title, are devoted to the brief discussion of the many new remedies that have been introduced into medicine during the past few years, although the author has seen fit to also

discuss a number of substances, such as quinine, amyl nitrite, carbon disulphide, which have been long in use by the medical profession. The various remedies are classified alphabetically, with a brief description, with their properties, therapeutic applications, and doses.

Several glucosides, notably adonidin and leptandrin, have been given the final *e*, which is the termination for alkaloids. Glucosides should terminate with *in*. Within the past few years so many synthetical compounds and animal products have been introduced that such a book as that compiled by Dr. Cerna cannot but be of considerable interest and value to the practitioner.

DISEASES OF THE URINARY APPARATUS. PHLEGMASIC AFFECTIONS. By John W. S. Gouley, M.D. New York: D. Appleton & Co., 1893.

The reputation of the author of this work is sufficient to insure it a cordial welcome by the medical profession and a careful study by the specialist. The first part of the book is devoted to general considerations covering the frequency of diseases of the urinary apparatus, with a sketch of the composition, innervation, nutrition, and function of the same; pathology, etiology, diagnosis, prophylaxis, and general therapeutics. The second section considers special diseases, such as nephritis, cystitis, prostatitis, urethritis, and retention of urine. The opening chapter traces the knowledge of the affections of the genital apparatus to a young savage, far back in the mists of time, harassed by the difficulties of micturition, or an aged savage in the throes of retention, finding relief by means of a hollow reed.

Throughout the work there is to be marked a certain cumbrous phraseology which to a student might be confusing. Moreover, there are classifications which confuse rather than make clear. Thus, taking at random the discussion of adenomata, we read that this class has two orders,—ectocœliac and entocœliac. The first order has four and the second order six genera, each generic name indicating the gland affected. Traumatic affections are characterized as "hurts caused by violence." Frequent urination is called sychnuresis; irrepressible urination, ascheturesis; difficult urination, dysuresis; painful urination, algeinuresis; involuntary urination, aconuresis. The name of chancsyphloid applied to the chancre is unfortunate and misleading. The chapter upon cystitis is probably the best in the book. The treatment, however, is by no means fully discussed. The cystoscope is not mentioned. In discussing gonorrhœa several pages are devoted to the historical consideration of the subject. The bacteriological researches prove conclusively the specific nature of the gonococcus. The author holds that nothing so far discovered has sufficed to explain the nature of contagion of those varieties of maladies miscalled gonorrhœa. He states that the mucous membranes which are most susceptible to venereal phlegmasia are the glans penis, the prepuce, the prostatic utricle, the urethral crypts, the anus, the mouth, and the conjunctiva, whilst the mucous membranes which are refractory are the prostatic ducts, the ejaculatory ducts, the seminal vesicles, the spermatic canals, the bladder, the rectum, the nose, and the lachrymal canals. These statements are not in accord with modern pathological teachings. Fournier is quoted as stating that seventy-five per cent. of all cases of urethritis are non-contagious. Masturbation is recorded as a frequent cause of urethritis. The operative treatment of urethritis is unhesitatingly condemned. No mention is made of the microscope as an aid in distinguishing between gonorrhœal and non-gonorrhœal urethritis. The local treatment of the first stage of urethritis consists of two daily irrigations of the phallic region of the canal with a solution of mercuric chloride (1 to 10,000, or even 1 to 20,000). The quantity for each irrigation should not be less than a pint of water at a temperature of 102° to 105° F. The injection is made by means of a smooth, hollow bougie of gum or glass, not over four inches long, acorn-shaped at its vesical extremity, not larger than No. 10 English, with three or four perforations at the base of the acorn. It is stated that if the irrigations are well tolerated by the urethra, and if the urethral congestion is decreased in the course of two days, the treatment should be continued several more days to insure deliquescence of the phlegmasia. This injection treatment should only be applied when the patient is seen in the first stage of urethritis. If, when it comes under observation, the discharge, instead of being clear mucus, is already opaque, it indicates the presence of pus and the beginning of the second stage. In such a case the local treatment by irrigations should not be employed. During this stage balsamics and injections are worse than useless, and provocative of complications and consequences which not only retard the cure, but are in themselves of grave import. Not until the stage of decline is far advanced should urethral injections be used, and then only if after the use of the balsamics there is still a slight discharge.

Among the most efficient agents for urethral irrigation in these cases are the corrosive chloride of mercury (1 to 10,000) and the sulphate and chloride of zinc. Of a solution of sulphate of zinc, half a grain to a grain to the ounce of water, a pint is to be used at night or in the morning by a fountain syringe, in order that the whole urethra may be flushed out. The chloride of zinc should be employed in even weaker solutions than the sulphate,—from a quarter to half a grain to the ounce. Complications of urethritis are discussed at length. The treatment of gonorrhœal rheumatism differs little, if at all, from that of acute or subacute rheumatism. Indeed, the author holds that this disease is perhaps ordinarily a subacute rheumatism, excited in a vulnerable subject by the genital phlegmasia, just as it might be excited by any other phlegmasia.

There is one statement in the treatment of chronic urethritis which requires an earnest protest at the hand of the reviewer. Gouley states that the idea to be impressed upon the minds of patients suffering from chronic urethral discharges are that these affections are not contagious, and that the frequently-reiterated assertion that a man who has once had virulent urethritis in his bachelor days, and marries years after the attack of urethritis, transmits the "gonorrhœal virus" to his wife, is without the slightest foundation.

There is probably no fact in medicine more clearly proved than that chronic urethral discharges often are contagious, and that the contagious properties may persist, though this is of course exceptional, for several years. A general acceptance of Gouley's dictum upon this subject would entail so much invalidism on the part of innocent women that it cannot be too vigorously combated.

There is an addendum upon retention of urine from prostatic obstruction in elderly men. The treatment laid down for this condition is most sound and valuable. Aside from the annoyance of constantly encountering words not in common use, and of finding some of the best and most reliable work of modern pathologists and bacteriologists slighted, it is only fair to state that this book is full of useful information derived from a peculiarly large personal experience.

CHOLERA. By G. Archie Stockwell, M.D., F.Z.T. Vols. I. and II.
Detroit, Mich.: George S. Davis, 1893.

Among the many accomplishments of Dr. Stockwell by no means the least is his ability to cull from medical literature interesting facts and statements, and to so place them side by side that they prove interesting reading to his professional brethren. Doubtless the possibility of a cholera epidemic caused this indefatigable worker to prepare this useful little volume.

We are certain that nowhere in medicine can the reader obtain so much information for so small an amount, as each volume costs but twenty-five cents.

A TEXT-BOOK OF THE THEORY AND PRACTICE OF MEDICINE. By American teachers. Edited by William Pepper, M.D., LL.D. In two volumes. Illustrated. Vol. I.
Philadelphia: W. B. Saunders, 1893.

Thirteen authors well known to the medical public of the United States have contributed towards the compilation of this double-volume text-book, under the experienced editorial hand of Dr. Pepper. It is needless, therefore, to state that the book is a valuable contribution to medical literature, and with a work which necessarily commands so much respect, it is the place of the reviewer to point out some of its faults rather than to fill pages with praise of the various articles.

We do not think that the book is sufficiently concise and definite in its statements to form a valuable text-book for the ordinary medical student. It will rather find its place in the hands of the post-graduate student or the practitioner who has the time or desire to read complete articles concerning the various diseases which come to his view for treatment.

We are sorry that in the article upon "Hygiene" Dr. Billings has devoted so short a space to that most interesting subject of immunity, which just at present is engaging the professional mind.

Some of the articles, while thorough in some respects, are, nevertheless, evidently hurriedly written, and perhaps most of the book reminds one of the foot-note on page 653, in which the advice given, if followed, will certainly not do much towards improving the literary style of the American doctor, for it says, "Authors and other persons who compose as they write will find an extraordinary saving of nerve-force and time by the use of the short-hand amanuensis. The habit of dictation can by most persons be readily formed. It must be remembered, however, that the person will dictate as much in one hour as he will write in three, so that the dictation means more expenditure of brain-force in the same period of time than occurs in composing by writing. The author who dictates must work fewer hours a day, but

even then will accomplish more than he would with his own pen." This is certainly true of quantity, but hardly of quality.

In the advertisement of the book, which is bound in with the text, we are told that "the articles are not written as though addressed to students in lectures, but are exhaustive descriptions of diseases," and perhaps this is as clear and definite a statement of exactly what the work is as any other which could be made.

Most physicians already have upon their shelves similar works, which, of course, do not deal with medicine in its most recent phases, and these recent phases, when given with conscientious judgment, form the chief value of Volume I. We understand that the second volume will appear in the early fall.

SOME PRACTICAL POINTS IN THE TREATMENT OF GRANULAR LIDS.

G. STERLING RYERSON (*Ontario Medical Journal*, May, 1893) writes as follows concerning the treatment of granular lids, the article being a continuation of the one previously noticed in the THERAPEUTIC GAZETTE:

The use of solid nitrate of silver is seldom required; such cases as demand its use are very serious ones, characterized by persistent atonic granulations. Sulphate of copper in solid crystal is also an excellent stimulant and astringent in just such cases. Its effect is diminished or increased in proportion as it is washed off after application. The crystal should be rubbed smooth on a grindstone before using. The pain of the reaction after its use can be diminished by instilling a few drops of cocaine before use and free bathing with cold water after. The mitigated stick (nitrate of silver 1 part, nitrate of potassium 2 parts) is also applicable to this same class of cases. Scarification by electrolytic knives, after the method of Johnson, is coming into fashion; but it must be said that the method is still *sub judice* and its results doubtful.

Of the sequelæ, or more properly the concurrent affections, pannus is by far the most serious. The treatment in most cases is simply the treatment of the granulations. Best cases are fairly plentiful, in which the corneal opacity is most obstinate, and in which permanent impairment of vision is threatened. The remedy *par excellence* for this condition is *jequirity*. One bean macerated in half an ounce of water was the standard strength, but later experiment has shown that powdered bean is the most efficacious. If properly kept in a glass-stoppered bottle, it will keep for a long time. Dr. Ryerson has some that he has had for five years, and it is still quite as good and active as when first obtained. In suitable cases a little is dusted on the conjunctiva. Great caution should be used to apply very little at first. Within six hours the eye begins to pain, the conjunctiva and lids to swell, and in twenty hours a thin pellucid or grayish pseudo-membrane is formed. The discharge from the eye is increased. There is heat and the heightened sensibility to light. If it is desired to stir up the eye still further, a little more jequirity powder is insufflated next day. Usually two doses accomplish all that is required.

It is best to allow the inflammatory reaction to have its own way for two or three days; after that it can be checked by warm boric acid lotions. After a week nitrate of silver solutions may be used. In some cases this process of cooling down may have to be repeated two or three times. He has never yet met with a case in which very material benefit did not result, even in old and apparently hopeless cases.

He gives a word of caution: Don't use jequirity except in very old and obstinate cases, in which the cornea is a good deal affected. He saw a case in New York some years ago in which, from its use, *both corneæ* sloughed.

In conclusion, he says, granular ophthalmia is easily cured at the outset, but it too often happens that patients underestimate its importance, and neglect or deliberately disregard warnings until the disease becomes fixed. He has under his care at the present time a case in which the granular process is quite active, eighteen years after the first neglected attack; therefore we cannot be too careful to forewarn patients of the future which awaits the negligent.

PERIORBITAL INCISION IN GLAUCOMA.

DR. G. SOUS (*Journal de Médecine de Bordeaux*, May 7, 1893), referring to the operation of elongation of the nasal nerve in the treatment of glaucoma, resolved to try the effect of a periorbital wound, but in a region where the nasal nerve could not be affected. Therefore in a suitable case he made an incision parallel to the orbital edge one centimetre in length and half a centimetre in depth. There was a small escape of blood, and then the wound was sutured. He thinks the facts are too few to allow explanation of the method of action of a section on a level with the end of the eyebrow, a section, moreover, which affects only the branches of the lachrymal nerve and causes only a slight escape of blood. Two of his ob-

servations refer to glaucoma, and were successful rather from the point of view of relieving the sufferings of the patient than of the improvement in sight. In a third case, where an enucleation will probably be indispensable sooner or later, the operation produced the result which might have been expected,—it relieved pain and restored calm; neither more nor less was required. For the present Dr. Sous very wisely concludes to give the facts to the public without comment. Whether his hope that facts to be elicited by greater experience with this operation will materialize remains to be seen. It seems likely from his communication that the hope of placing this operation among well-recognized surgical procedures for the relief of glaucoma will not be realized.

Correspondence.

BERLIN.

(From an Occasional Correspondent.)

Berlin surgeons are divided in their opinions regarding the relative merits of asepsis and antisepsis. Professor von Bergman and Dr. Israel are the most consistent advocates of asepsis and the "dry" method of operating, while Professors Bardeleben and Olshausen still use the antiseptic methods, keeping all their instruments, sponges, and gauze compresses in 2.5 per cent. carbolic solution. The other surgeons steam-sterilize everything. They use small pieces of gauze, about one foot square, as sponges, and keep instruments in sterile or soda water. In their operations they are very particular about the loss of blood. Each vessel is secured by a hæmostat as soon as cut, and all are ligated before proceeding with a subsequent step in the operation. They claim that the loss of blood and the use of sublimate and carbolic acid in the wound explains the frequent occurrence of shock, of which they hear so much from Americans. Whatever may be the cause, they certainly have but few cases of shock, without taking special precautions against its occurrence. In preparing patients for an operation they are stripped, scrubbed, and soaked in sublimate, then covered with but a sheet, in even the severest cases. More frequently are the battery and artificial respiration called for in chloroform narcosis than the use of external heat or hypodermics in shock. Patients are prepared for operation in the usual way. The region of operation is thoroughly scrubbed with soap, water, and brush, then with alcohol or ether, and finally with a 1 to 1000 sublimate solution; but I have seen no cases prepared before the hour of operation, this duty usually being performed while the patient is being narcotized.

Catgut is generally used for internal suturing and ligations, while silk is reserved for the skin. Iodoform and sterile gauze and sterilized moss constitute the dressings. Catgut is prepared by soaking for twenty-four hours in ether, and is then placed in either a 1 to 1000 alcoholic sublimate solution or in a mixture of iodoform one part, ether two parts, and alcohol eight parts.

Injections of iodoform and glycerin in various proportions are used in nearly all the hospitals in cases of tubercular arthritis. Dr. Hahn, at the City Hospital, uses a twenty-five-per-cent. solution, and in a series of about two hundred cases has had very satisfactory results.

Professor Bardeleben uses a six-per-cent. solution at the Charité Hospital, and finds the recoveries reach scarcely five per cent., while in twenty-five cases of tubercular arthritis in the past two months at the University Hospital, Professor von Bergman has had to resort to the knife in but five. It may be worth mentioning that Dr. Israel, after giving it a fair trial at the Jewish Hospital, says he never saw a case cured by the process, and in only a few cases did he note improvement.

In a series of six cases of carcinomatous rectum, occurring this summer at the Charité Hospital, Professor Bardeleben has performed left inguinal colotomy in each case without a single death. He secures the colon to the opening in the abdominal wall by a few silk sutures, and two days afterwards opens the intestine. The artificial anus thus formed is kept patulous by means of a full-sized rectal bougie.

Dr. Israel has operated upon the kidney over eighty times. Out of twelve cases of malignant disease, in which the kidney was removed, two died from the operation; three died subsequently of what he calls collapse. Of the remaining seven, all are living, the first operation occurring six and a half years ago. Out of thirty-five cases in which the kidney was operated upon for various causes, chiefly stone, in which the kidney was not removed, he has had six deaths; and the total mortality of all his cases, excluding the twelve malignant cases, is nine per cent.

In a series of sixty-five cases of typhlitis, Professor Sonnenburg operated in forty cases of primary perforation without a single death,

while in the remaining twenty-five cases operated upon after general peritonitis had set in, but five recovered. The same surgeon, following the plan proposed by Dr. Myer, has filled the diseased bone-cavities of two patients with an amalgam filling, composed of copper and mercury, which has a continuous antiseptic action. Sufficient time has not yet elapsed for judgment to be passed upon this procedure.

I have lately seen two operations for the cure of inguinal hernia not usually described in our text-books.

Professor Bardeleben prefers the following: After freeing the sac from all adhesions and reducing the hernia, the sac is split into two wings, whose attachments are respectively the inner and outer pillars of the external ring. These two parallelograms of tissue are then rolled into scrolls, which, when tightly compressed, rest against their respective pillars and occlude the opening, in which position they are sewed. At the same time the pillars are united, and in this way act as a plug to the external ring. The cutaneous wound is then closed by a few stitches, the intervening spaces being packed with iodoform gauze and allowed to heal by granulation.

The second plan has twice been performed by Dr. Israel, following the plan proposed by Kocher, of Berne. After completely freeing the sac and reducing the hernia, the sac is tightly twisted into a cord and ligated as close to the external ring as possible. At this juncture an incision is made through the external oblique muscle directly over the internal abdominal ring. The twisted sac is then forced through the inguinal canal and drawn through the new opening, where it is again ligated at a lower point and subsequently sutured. It is then either cut away or laid down in the direction of the canal and sutured there, acting as a tampon to strengthen the wall. The external ring is then closed by deep sutures and the skin closed over the whole, union by first intention being sought for.

This last method is only proposed for those cases of oblique inguinal hernia in which the canal has not been obliterated by the dragging down of the internal ring by a long-standing or very large hernia. All fractures are put up in plaster or silicate of sodium casts. If there is much contusion, the formation of large blebs, or extensive swelling on admission, the wounded member is temporarily dressed until the following day, when the limb is put up permanently. Very frequently the patient is allowed to go about the ward on the following day. Whether this accounts for the very bad results one constantly meets with, I am unable to state.

CLINICAL NOTE ON COCILLAÑA.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—Through the courtesy of Messrs. Parke, Davis & Co., of New York, I have been supplied with a quantity of the fluid extract of cocillaña, with a request that I should investigate its therapeutical properties.

The drug was introduced in 1886 by Professor Rusby, of New York, from Bolivia, where the natives used it purely for its emesic properties. Dr. Rusby considers its physiological action similar to that of emetine, and that it is excreted by the mucous membrane of the respiratory tract, exciting the glands to excessive action, which continues for a time and then leaves them in a state of sedation, and that its chief value would be found in cases of croup, bronchitis, and pneumonia. It is in these diseases that I have thought fit to use the preparation. In the limited number of cases of croup in which I have used the drug I have not been satisfied of its utility, but probably this was due to my temerity in pushing the drug as I should have done ipecacuanha. In many cases of capillary bronchitis, catarrhal and bronchopneumonia not infrequently limited to one lobe, occurring in a severe epidemic of measles, I found it useful; also in the first stage or dryness and stuffiness of acute bronchitis, both of children and adults, the cough becoming looser and the sputum more abundant. In the hard, dry cough of bronchitis the liquid extract may be advantageously combined with carbonate of ammonia and squills.

It no doubt stimulates the respiratory centre and acts as a sedative expectorant. In its action as a bronchial antispasmodic, while momentarily increasing the spasm, it causes a profuse and rapid flow of mucus from the bronchial tubes, thus relieving the tension of the vessels and causing reflex cough, and in this manner increased secretion and expulsion.

Its special action upon the heart will probably be found to be as a direct depressant of the cardiac centre and nervo-muscular apparatus.

That the drug is a useful one I think further research will prove. The true value of a new therapeutic agent can only be determined by its frequent use by many investigators before it can be accepted to occupy its proper place in the materia medica.

I. FLETCHER HORNE,
M.D., D.SC., F.R.C.S.E.
BARNSLEY, ENGLAND.